PHYSICS ABSTRACTS

SECTION A

of

SCIENCE ABSTRACTS

SECTION A, PHYSICS

SECTION B, ELECTRICAL ENGINEERING

Edited and Issued Monthly by

THE INSTITUTION OF ELECTRICAL ENGINEERS

In Association with

THE PHYSICAL SOCIETY

THE AMERICAN PHYSICAL SOCIETY

THE AMERICAN
INSTITUTE OF ELECTRICAL ENGINEERS

VOLUME 48 **1945** INDEX NUMBER

AUTHOR INDEX

EL, E. On the kinetics of nitric acid, 678
REE, S. F. *See* BATES, R. G.; HAMER, W. J.; MACLEAN, M. E.; MANOV, G. G.; MARYOTT, A. A.
AMS, E. Q. Non-*K*-electron capture by nuclei of relatively low isotopic number, 1935; *see also* FORSYTHE, W. E.
AMS, H. E. *See* STEPHENSON, C. C.
AMS, L. H. Geophysical Laboratory, 2599
AMS, W. S. Mount Wilson Observatory, 1652
DISON, C. C. The properties of freshly formed surfaces. III. The mechanism of adsorption, with particular reference to the *sec.*-octyl-alcohol–water system, 367; IV. The influence of chain length and structure on the static and the dynamic surface tensions of aqueous-alcoholic solutions, 1719; V. A velocity-time equation for adsorption to dynamic surfaces, 2798; The measurement of surface and interfacial tensions at fresh surfaces by the vibrating jet method, 2795
DEL, A., and BARKER, E. F. Grating infra-red measurements at oblique incidence. Line width in the spectrum of N_2O, 2900
DRIAN, A. P. Evaluating the opacifying properties of pigments, 929
GNEW, R. P. Euler transformations, 783; On sequences with vanishing even or odd differences, 784
GRUSS, M. S. *See* ASKEVOLD, R. J.
HERNE, J. C., and REILLY, J. Studies in Peat. XIII. Mona wax and its constituents as emulsifying agents, 135; The permanence of an emulsion sponsored by a Mona wax, 697
HMAD, A. *See* CHAUDHRI, R. M.
HRENS, L. H. Isomorphic relationship between rubidium and thallium in igneous minerals, 2574
IKEN, W. H. *See* DOTY, P. M.
IRD, J. *See* REEKIE, J.
IYA, S. V. C., and SAXENA, R. C. Slow mesons in cosmic radiation, 986
IYA, S. V. C. *See also* BHABHA, H. J.
AN ALBADA, G. B. Energy liberation in red giant stars, 1222
LBERT, A. A. The matrices of factor analysis, 18; The minimum rank of a correlation matrix, 20
LBERTY, R. A., and WASHBURN, E. R. The ternary system isobutyl-alcohol–benzene–water at 25° C., 1729
LCOCK, T. C. *See* BUNN, C. W.
LDERMAN, D. M. *See* SMITH, H. A.
LESHNICK, J. J. *See* RICCI, J. E.
LESSANDRINI, E. I. The use of the electron diffraction camera to detect insulating films, 2319
LEXANDER, A. E., and RIDEAL, E. K. Existence of time-dependence for interfacial tension of solutions, 2183
LEXANDER, L. *See* KLUG, H. P.
LEXANDER, P. Instruments for the measurement of pumping speed of high-speed vacuum pumps, 885
LEXANDER, R. S. Factors controlling firefly luminescence, 164
LFEIS, M. *See* SCHEELE, W.
LFERS, J. B. *See* GALE, J. A.
LFREY, T. A molecular theory of the viscoelastic behaviour of an amorphous linear polymer, 324; Non-homogeneous stresses in visco-elastic media, 1550
LFREY, T., and DOTY, P. Statistical thermodynamics of high-polymer solutions. I. Theory for dilute solutions, 1814
LFVÉN, H. On sunspots and the solar cycle, 460; On the effect of a vertical magnetic field in a conducting atmosphere, 462; On the existence of electromagnetic-hydrodynamic waves, 637
LFVÉN, H., and MALMFORS, K. G. Directional measurements of cosmic radiation, 629
LICHANIAN, A., ALICHANOW, A., KOCHARIAN, N., KVARZ'HAVA, I., and MIRIANASHVILLI, G. The absorption of the soft component in water at an altitude of 3 225 m, 2343
LICHANIAN, A. *See also* ALICHANOW, A.
ALICHANOW, A., ALICHANIAN, A., and MIRIANASHVILLI, G. Decay electrons resulting from fast mesons, 2332
ALICHANOW, A., ALICHANIAN, A., and NEMENOV, L. Soft component of cosmic rays at an altitude of 3 250 m, 2333
ALICHANOW, A. *See also* ALICHANIAN, A.
ALKHAZOV, D. G., MESCHERYAKOV, M. G., and CHROMCHENKO, L. M. The Radium Institute cyclotron. I. The arc type of ion source, 2328
ALKIRE, G. J. *See* VAN RYSSELBERGHE, P.
ALLAN, G. E. On the tones of thin cylindrical tubes, 531
ALLEN, D. N. DE G., and SOUTHWELL, R. V. Relaxation methods applied to engineering problems. X. The graphical representation of stress, 1257
ALLEN, D. N. DE G., SOUTHWELL, R. V., and VAISEY, G. Relaxation methods applied to engineering problems. XI. Problems governed by the "quasi-plane-potential equation," 1204
ALLEN, F. The delineation of retinal zones with dark tube vision, 1448; Production of difference tones, 2841
ALLEN, M. *See* MACDOUGALL, F. H.
ALLEN, P., and WALDER, P. S. Accuracy of mineral frequency analysis of sediments, 2494
AMBARZUMIAN, B. On the problem of the diffuse reflection of light, 2246
AMBROSIS, R. J. Sensitization of photographic plates in ultra-violet, 771
AMDUR, I., and GLICK, C. F. Steady-state sensitivity of a vacuum bolometer, 2860
AMENT, W. S. The lines of principal stress in the plane problem of plasticity, 309
AMES, S. R., and DAWSON, C. R. Determination of copper in copper proteins using the dropping mercury electrode, 2543
AMIS, E. S., JAFFÉ, G., and OVERMAN, R. T. The diacetone-alcohol–hydroxide-ion reaction from the standpoint of ion-dipole theory, 1065
AMIS, E. S., and OVERMAN, R. T. A spectrographic and kinetic study of the alkaline fading of tetraiodophenolsulphonphthalein, 338
AMIS, E. S. *See also* WEST, P. W.
AMTSBERG, H. C. Sub-zero treatment of steel, 948
ANANTAKRISHNAN, S. V., and VARADACHARI, P. S. The hydrogen bond and diamagnetism, 632
ANDERSON, E. W. *See* BOSCH, W. C.
ANDERSON, H. A. The silicon chlorobromides, 2782
ANDERSON, H. H. *See* FORBES, G. S.
ANDERSON, J. S., and MORTON, M. C. Semi-conducting properties of stannous sulphide, 1835
ANDERSON, R. C. *See* MOORE, J. W.; MOORE, R. L.
ANDERSON, T. F., DELBRUCK, M., and DEMEREC, M. Types of morphology found in bacterial viruses, 2047
ANDERSON, W. E. *See* OETJEN, R. A.
ANDERSSON, J. *See* BORELIUS, G.
ANDREWS, H. L. Skin-resistance changes and measurement of pain threshold, 605
ANDREWS, H. L., and HORECKER, B. L. A simplified photo-electric colorimeter for blood analysis, 2958
ANDREWS, R. D. *See* TOBOLSKY, A. V.
ANSELM, A. Theory of polarization of dipole liquids in strong electric fields, 1923
ANSLOW, G. A. Ultraviolet spectra of biologically important molecules, 1763
ANTONOFF, G. On the separation of oil from the surface of water, 128
ANTONOV-ROMANOVSKII, V. V. The mechanism of luminescence of phosphors. I–II, 2945
APPAPILLAI, V. *See* GEORGE, E. P.
APPLETON, E. V. Departure of long-wave solar radiation from blackbody intensity, 2861
ARCHENHOLD, G. H., SANSOM, G. S., DOCK, E. H., BLACKWELL, D. E., DE LA BERE, J. C. W., VAND, V., and HOLDSWORTH, R. A solar halo phenomenon, 1147
ARLICK, A. B. Electric potential of the earth's surface, 2724

ARMITAGE, F. D. Further uses for Chlorazol Black E and a new stain for botanical sections, 205

ARMSTRONG, D. L. A greaseless magnetic valve for high vacuum systems, 2821

ARONOVSKY, S. I. *See* DRYDEN, E. C.; YOUNGER, J. O.

ARREGGER, C. E. Measurement of long end-gauges by comparison with precision line standards, 2157

VAN ARTSDALEN, E. R. *See* KISTIAKOWSKY, G. B.

ASCOLI, G. On a functional equation, 1207

ASH, A. *See* GRISWOLD, E.

ASHBROOK, J. Ephemeris corrections for seven Cepheid variables, 475; The Cepheid variable BK Aurigae, 807

ASHWORTH, J. R. Behaviour of ultra-violet and daylight rays in the solar cycle, 2116

ASKEVOLD, R. J., and AGRUSS, M. S. Analysis of the light constituents in crude petroleum by low-temperature fractional distillation, 2545

ASTON, J. G., ISSEROW, S., SZASZ, G. J., and KENNEDY, R. M. An empirical correlation and method of calculation of barriers hindering internal rotation, 373

ASTON, J. G., MOESSEN, G. W., HARDY, H. C., and SZASZ, G. J. The heat capacity of gaseous butadiene-1, 3, 1491

ASTON, J. G., SAGENKAHN, M. L., SZASZ, G. J., MOESSEN, G. W., and ZUHR, H. F. The heat capacity and entropy, heats of fusion and vaporization, and the vapour pressure of trimethylamine. The entropy from spectroscopic and molecular data, 589

ASUNDI, R. K., and PADHYE, M. R. Near ultra-violet emission bands of benzene, 2903

ASUNDI, R. K., and VENKATESWARLU, P. Emission bands of the fluctuation type in the spectrum of iodine, 2887

ATKINS, W. R. G. Daylight and its penetration into the sea, 2934

ATTWOOD, S. S., and BIXBY, W. H. Breakdown and time-lag of dielectric materials. Breakdown of liquid carbon tetrachloride, 609

AUGER, P., ROGOZINSKI, A., and SCHEIN, M. Investigation of extensive atmospheric showers in the stratosphere, 1887

AULUCK, F. C., and KOTHARI, D. S. The quantum mechanics of a bounded linear harmonic oscillator, 2740; The energy levels of "holes" in liquids, 2746

AULUCK, F. C. *See also* KOTHARI, D. S.

AUSTIN, A. E. *See* WOOD, S. E.

AUSTIN, A. T., HARTUNG, E. J., and WILLIS, G. M. Studies in membrane permeability. IV. An improved apparatus for measuring diffusion rates, and the permeability of copper ferrocyanide to eleven solutes, 141

AYYANGAR, A. A. K. Interaction formulae in analysis of variance, 2105

AZAD, A. A. *See* PERRIER, A.

D'AZAMBUJA, L. The activities of the Meudon Observatory since 1940, 2701

BAADE, W. Periodic comet Wolf I, 459; The expanding shell around Nova Herculis, 467; NGC 147 and NGC 185, two new members of the local group of galaxies, 820; The resolution of Messier 32, NGC 205, and the central region of the Andromeda nebula, 821

BABER, T. D. H., and MIRSKY, L. Note on certain integrals involving Hermite's polynomials, 56

BÄBLER, F. Generalization in mathematics, 1173

BACHMAN, C. H. Small oil diffusion type vacuum pump, 2827

BACHRACH, E. The ionic composition of vegetables and their culture temperatures, 1150

BACON, R. H., and KROEGER, W. J. Ballistics of small-arms ammunition, 852

BADDAR, F. G. *See* MIKHAIL, H.

BADIN, E. J., and PASCU, E. Mechanism of catalytic hydrogenation and dehydrogenation of aldehydes and alcohols, 1073

BAI, K. S. Interferometric studies of light-scattering in binary liquid mixtures. II, 186; The Raman spectrum of hexamethylene-tetramine, 577

BAIER, H., and HUNDT, W. Improving fibres by bleaching, 2068

BAILEY, E. B. The natural resources of Great Britain. I. Minerals, 417; II. Underground waters, 402

BAIRD, H. F. Magnetic declination in New Zealand for epoch 1943–5, 2033

BAKER, C. L. Geology, climate and soils in Texas, 2598

BAKER, G. S. The efficiency of marine screw propeller and the drag coefficient, 1717

BAKER, J. R. Tube-length in photomicrography, 198; A fluid for softening tissues embedded in paraffin wax, 202

BAKER, R. F. *See* HILLIER, J.

BALBI, C. M. R. A basis for the prediction of performance of hearing-aids, 551

BALDWIN, F. P., TURNER, L. B., and ZAPP, R. L. Vulcanization of GR-I, 1075

BALDWIN, G. C., and KOCH, H. W. Threshold measurements on the nuclear photo-effect, 1962

BALDWIN, R. R. *See* RUNDLE, R. E.

BALE, W. F. *See* FENN, W. O.

BALICKI, M. A study of work-hardening and reannealing of iron, 1168

BALL, E. G. *See* FRUTON, J. S.

BALLARD, R. G., and HALL, C. P. Recent advances in aircraft tachometer design, 858

BALLARD, W. E. The formation of metal-sprayed deposits, 1548

BALLOU, J. W., and SILVERMAN, S. Young's modulus of elasticity of fibres and films by sound-velocity measurements, 313

BALMFORTH, W., and HOLLAND, A. J. The stress-optical coefficient of glasses, 2884

BALSEIRO, J. A. *See* RODRIGUEZ, A. E.

BANERJEA, A. K. On the influence of magnetic field on the absorption spectra of liquids, 2909

BANERJEE, D. P. On some formulae in analytical theory of numbers. I and II. 8, 1177; On the application of the congruence property of Ramanujan's function to certain quaternary forms, 2659

BANES, F. W. *See* WALL, F. T.

BANGERT, W. M. *See* KELLEY, K. K.

BANKS, W. H., BRACKNER, A. V., and LEACH, S. J. Cryoscopy of solutions, 1308

BANNER, E. H. W. Recording electric discharge paths in air-gaps, 2302

BARAJAS, A., BIRKHOFF, G. D., GRAEF, C., and VALLARTA, M. S. On Birkhoff's new theory of gravitation, 488

BARBER, R. W. Use of various papers in paper laminates, 3143

BARBROW, L. E. *See* PROJECTOR, T. H.

BARJANSKY, A. The distortion of the Boussinesq field due to a circular hole, 2000

BARKER, E. F. *See* ADEL, A.

BARKER, H. The X-ray examination of laminated plastics, 3078

BARKER, H. A. *See* KAMEN, M. D.

BARKER, H. T. Development of weatherproof, solid fibre board, 2650

BARKOW, A. G. An X-ray diffraction study of the fatigue in metals at high stresses, 2591

BARLEY, R. C. *See* MILLER, C. O.

BARNARD, G. A. Economy in sampling, 2689

BARNES, C. E. Mechanism of vinyl polymerization. I. Rôle of oxygen, 2533

BARNES, D. K. *See* HARVEY, E. N.

BARNES, J. C. Nomograph for equations of the form $yx^n = z$, 1215

BARNES, N. F., and BELLINGER, S. L. Schlieren and shadowgraph equipment for air-flow analysis, 1464, 2881

BARNES, R. B., MCDONALD, R. S., VAN ZANDT WILLIAMS, and KINNAIRD, R. F. Small prism infra-red spectrometry, 2234

BARNES, R. H., RUSOFF, I. I., MILLER, E. S., and BURR, G. O. Relationship between unsaturation and the ultra-violet absorption spectra of various fats and fatty acids, 179

BARNETT, S. J. New researches in gyromagnetism, 995

BARR, V. V. *See* GLASSTONE, S.

BARR, W., and PEARSON, T. F. Physical control methods in the steel industry, 1169

BARRER, R. M. Sorption by gmelinite and mordenite, 522; Diffusion in spherical shells, and a new method of measuring the thermal diffusivity constant, 1311

BARRETT, E. O. Growth of water drops in a Wilson cloud chamber, 585

BARROW, R. F. Rotational analysis of ultra-violet bands of silicon monosulphide, 175

ARROW, R. F., and CRAWFORD, D. V. A note on the spectrum of MgO, 901

ARTEN, H. J. On the deflection of a cantilever beam, 1258

ARTLESON, J. D. *See* BURK, R. E.

ARTLETT, J. H. Periodic phenomena at anodes, 2479

ARTLETT, M. S. Negative probability, 1639

ARTLETT, P. D., CONDON, F. E., and SCHNEIDER, A. Exchanges of halogen and hydrogen between organic halides and isoparaffins in the presence of aluminium halides, 1049

ARTON, C. J., and PRUTTON, A. J. Photometric method for determination of hemicellulose, 162

ARTON, D. H. R., and JONES, E. R. H. Optical rotatory power and structure in triterpenoid compounds. Application of the method of molecular rotation differences, 1436

ARTRUM, P. C. A slide rule for upper-air hygrometric calculations, 1584

ASU, C. *See* KAR, K. C.

ASU, K. *See* BOSE, S. N.

ATCHELOR, G. K., and TOWNSEND, A. A. "Singing" corner vanes, 2202

ATEMAN, H. The transformation of partial differential equations, 1627

ATEMAN, L., and KOCH, H. P. The structure of polyisoprenes. III. Ultra-violet absorption spectra, 1420

ATES, R. G., and ACREE, S. F. *p*H of aqueous mixtures of potassium dihydrogen phosphate and disodium hydrogen phosphate at 0° to 60° C., 2474

ATRA, K. C. *See* VYAS, N. D.

ATTISTA, O. A. Molecular weight of cellulose, 119

AUCHWITZ, F. K., and SHOENBERG, D. A new interference effect, 2947

AUER, B. B. Notes on distortion in phonograph reproduction caused by needle wear, 2214

AUER, C. A. A report on new sectrographic material of 13 Ceti, 2127; The spectrum of W Serpentis, 2712

AUER, S. H., FINLAY, G. R., and LAUBENGAYER, A. W. On the structure of dimethyl ether-boron trifluoride, 2516

AUERNFEIND, J. C., BAUMGARTEN, W., and BORUFF, C. S. Adsorption phenomenon of beta-carotene, 1116

AUMGARTEN, W. *See* BAUERNFEIND, J. C.

AXTER, H. W. Determination of the specific heat of electrical conductors up to their melting point by an oscillographic method, with results for copper, 222; Checking electrically maintained tuning forks, 2201

AXTER, S., and CASSIE, A. B. D. The water repellency of fabrics and a new water repellency test, 2187

AXTER, S. *See also* CASSIE, A. B. D.

EACALL, T. The melting-points and unit cells of the methyl-benzenes, 2978

EACHAM, C. C. *See* WEST, T. S.

EALS, C. S. Some results of a spectrophotometric study of the Wolf-Rayet binary HD 193576, 1668

EAMENT, J. W. L. An apparatus to measure contact angles, 873

EAR, R. S. X-ray diffraction studies on protein fibres. I. The large fibre-axis period of collagen, 1024; II. Feather rachis, porcupine quill tip and clam muscle, 1583; Small-angle diffraction studies on protein fibres, 2384

EARD, D. *See* SHARP, D. G.

EARD, J. W. *See* SHARP, D. G.

EATTY, S., and WALES, M. Theory of algebraic functions based on the use of cycles, 777

ECK, G. Conception of the electromagnetic field in Dirac's theory, 2357

ECKERLEY, J. G. Expansion of positive-energy Coulomb wave functions in powers of the energy, 1236

EEDE, H. C. *See* WILSON, W. M.

EEMAN, L. A., GOODWILL, F. C., and SHEARER, R. Bleached groundwood pulp. Properties of sodium peroxide bleached pulp and its application in paper manufacture, 1598

EEMAN, W. W., FORSS, J., and HUMPHREY, J. N. The Cu *K* absorption edges of the cuprous halides, 1851

EITMAN, M. N. Electronic circuits perform mathematical processes, 2084

EKKEDAHL, N. *See* SCOTT, R. B.

ELAIEV, H. M. Application of the theory of plastic deformation to calculations of creep at high temperatures, 312

BELENKY, S. Z. On the theory of the shower spread, 2338

BELINFANTE, F. J. On the commutativity of the Dirac electron wave function with the electromagnetic field, 1237

BELL, E. T. A method in rational diophantine analysis, 1178

BELL, P. O. New systems of hypergeodesics defined on a surface, 433

BELL, R. P. A problem of heat conduction with spherical symmetry, 939; Eigen-values and eigen-functions for the operator $d^2/dx^2 - x$, 1193; Bond torsion in the vibrations of the benzene molecule, 1406; The occurrence and properties of molecular vibrations with $V(x) = ax^4$, 1534; *see also* BURAWOY, A.; COULSON, C. A.

BELL, R. P., and LONGUET-HIGGINS, H. C. The normal vibrations of bridged X_2Y_6 molecules, 2363

BELLINGER, S. L. *See* BARNES, N. F.

BELTON, J. W., and Evans, M. G. Studies in the molecular forces involved in surface formation. II. Surface free energies of simple liquid mixtures, 869

BENCKERT, C. R. A variant of the sieve of Eratosthenes, 6

BENDEL, L. Deformation law in soil mechanics, 1029

BENEDICKS, C., and SEDERHOLM, P. On the expansion hysteresis of invar, 210; Regarding the formation of anchor (ground) ice, 724; Further experiments regarding the phenomenon of floating drops, 1722

BENEDICT, M., SOLOMON, E., and RUBIN, L. C. Liquid-vapour equilibrium in methane-ethylene-isobutane system, 2444

BENEDIKT, E. T. On the representation of rigid rotations, 98, 2751

BENFORD, F. Design method for a Schmidt camera with a finite source, 763; The projection of light, 1758

BENHAM, W. E. A new occurrence of the electronic phase velocity, 3037

BENNINGTON, T. W. Sunspot minimum, 1227

DE LA BERE, J. C. W. Lunar coronae, 458; *see also* ARCHENHOLD, G. H.

BERENDA, C. W. The two-body problem in Birkhoff's and Einstein's theories, 1229

BERG, B. M. *See* CLASH, R. F., JR.

BERGMANN, M. *See* FRUTON, J. S.

BERGSTRAND, E. A scale-of-N counter and the sensitiveness towards light of a Geiger-Müller tube, 289

BERGSTRÖM, H. A simplified proof of the principal-ideal theorem of classical field theory, 79

BERL, E., BERL, W. G., and STERBUTZEL, G. A. Thermobarometer. Quick and exact conversion of gas volumes into weight, 2194

BERL, W. G. *See* BERL, E.

BERLENBACH, B. E. *See* TOLBERT, B. M.

BERMAN, L. Torsional vibration in internal combustion engines, 2834

BERNAL, J. D. The future of X-ray analysis, 2393

BERRY, C. E. *See* WASHBURN, H. W.

BERS, L., and GELBART, A. On a class of differential equations in the mechanics of continua, 62

BESICOVITCH, A. S. A general form of the covering principle and relative differentiation of additive functions, 2668; Totally heterogeneous continua, 2695

BESKIN, L. Strengthening of circular holes in plates under edge loads, 499; Bending of curved thin tubes, 2410; *see also* MORRISON, I. F.

BETHE, H. A. Theory of diffraction by small holes, 634

DE BÉTHUNE, A. J., and KIMBALL, G. E. Hydrogen overvoltage in concentrated sulphuric and phosphoric acid solutions, 2478

BEUTLER, H. G. The theory of the concave grating, 2949

BHABHA, H. J. Relativistic equations for particles of arbitrary spin, 2144

BHABHA, H. J., AIYA, S. V. C., HOTEKO, H. E., and SAXENA, R. C. Latitude effect for mesons, 2349

BHABHA, H. J., and HARISH-CHANDRA. On the theory of point-particles, 840

BHADURI, P. N., and SEMMENS, C. S. Nucleolar staining method applied to animal tissues, 204

BHAGAVANTAM, S. Normal oscillations of the T_d class diamond structure, 707

BHAGAVANTAM, S., and BHIMASENACHAR, J. Elastic constants of diamond, 310; A new method for determining the elastic constants of crystals, 706;

Elastic constants of crystals. A new method and its application to pyrites and galena, 2565; Shear modes in non-piezo-electric crystal plates, 3122

BHAGAVANTAM, S., and SURYANARAYANA, D. Shear modes in piezo-electric crystal plates, 2560; Elastic constants of piezo-electric crystals. Zinc sulphide, 2564

BHATNAGAR, P. L. Pulsation and white dwarfs, 471; Range of light variations in Cepheid variables, 1666

BHATNAGAR, P. L., and KOTHARI, D. S. A note on the pulsation theory of Cepheid variables, 1667

BHATTACHARYA, G. N. The dielectric properties of lac, 601; The dielectric properties of dammar and mastic resins, 1828; The dielectric dispersion of a few natural resins in non-polar solvents, 1829

BHATTACHARYA, K. N. On a new symmetrical balanced incomplete block design, 1643

BHATTACHARYYA, A. On a measure of divergence between two statistical populations defined by their probability distributions, 76

BHIMASENACHAR, J. *See* BHAGAVANTAM, S.

BIBBY, J. R. Smoke and rain, 409

BICKFORD, W. G. *See* OLIVER, G. D.

BICKLEY, W. G. Notes on the evaluation of zeros and turning values of Bessel functions. III. Interpolation by Taylor series, 2680

BICKLEY, W. G., and MILLER, J. C. P. Notes on the evaluation of zeros and turning values of Bessel functions. I. Introductory, 2678; II. The McMahon series, 2679; V. Checks, 2682

BIERTUEMPFEL, R. E. *See* YOUNG, D. W.

BILLINGTON, N. S. Thermal insulation. IV. The thermal insulation of buildings, 1793

BILLMEYER, B. R. *See* POWERS, P. O.

BILMES, L. Some applications of the Nutting–Scott-Blair equation, 325; A note on the representation by model systems of the behaviour under stress of rubber-like materials, 2060; A theory of the Calender effect in rubber-like materials, 2414

BINDER, R. C. Relation between area and velocity for isothermal gas flow, 868

BINNIE, A. M. Stresses in the diaphragms of diaphragm-pumps, 2001; A double-refraction method of detecting turbulence in liquids, 2785

BIRGE, R. T. The 1944 values of certain atomic constants with particular reference to the electronic charge, 2289

BIRKHOFF, G. D. Flat space-time and gravitation, 839; *see also* BARAJAS, A.

BIRKS, L. S., and FRIEDMAN, H. Correlation of MgO particle size determination by electron microscope and X-ray diffraction, 2030

BISCHOFF, W. G. The development of controlled hardenability, 1038

BISHOP, G. H. The relation of bio-electric potentials to cell functioning, 231

BISHUI, B. M. *See* SIRKAR, S. C.

BISWAS, B. N. Two-dimensional statistics of perfect gases of complicated molecules, 100

BIXBY, W. H. *See* ATTWOOD, S. S.

BLACKWELL, D. E. *See* ARCHENHOLD, G. H.

BLAIR, G. W. SCOTT. *See* CAFFYN, J. E.

BLAIR, M. G., and PEFFER, E. L. Thermal density coefficients and hydrometer correction tables for vegetable tanning extracts, 944

BLAISSE, B. *See* MICHELS, A.

BLAKE, F. C. *See* EDWARDS, J. E.

BLATT, J. M. On the meson charge cloud around a proton, 1927

BLATZ, I. H. *See* WEILLER, P. G.

BLEULER, K., and WEIGLE, J. Remarks on the diffraction of X-rays by thermal waves, 1515

BLEULER, K. *See also* BONNELANCE, L.

BLISS, H. *See* HANEY, R. E. D.; HUNTER, J. B.

BLOCH, H. S. *See* THOMAS, C. L.

BLOCH, I. A theory of membrane permeability: I, 517

BLOCH, R., LITTMAN, H. Z., and ELAZARI-VOLCANI, B. Occasional whiteness of the Dead Sea, 403

BLODGETT, G. *See* SATTERLEE, H. S.

BLOOM, H. *See* HEYMANN, E.

BLOOMENTHAL, S. The Hardy coefficient for instrument oil, 2437

BLOUNT, R. F. *See* HEGRE, E. S.

BLOUT, E. R., and GOFSTEIN, R. M. The absorption spectra of certain aldazines, 1410

BLOUT, E. R., and SILVERMAN, D. C. The catalyt reduction of nitrocinnamic acids and esters, 1069

BLOW, C. M., HISCOX, N. G., and SMITH, M. W. Th estimation of ammonia in electrolysed cyanic plating solutions, 378

BOAS, W., and HONEYCOMBE, R. W. K. Thermal fatigu of metals, 319

BOBALEK, E. G. *See* KANNING, E. W.

BOBROVNIKOFF, N. T. Spectra of the planets, 2697

DE BOER, J. The transport phenomena of gaseou helium at very low temperatures, 1275; The inte molecular field of hydrogen and deuterium and th quantum mechanical theory of the equation o state, 1533

BOERICKE, F. S. *See* KELLEY, K. K.

BOGATY, H., and CARSON, F. T. Measurement of ra of flow of water through filter paper, 1018

BOGGS, F. W. *See* WORKS, C. N.

BOHN, J. L. *See* MORGAN, J.

BOHR, E. *See* SIEGBAHN, K.

BÖHRINGER, H. "Zellwolle" investigations. I. Con parative tests of fibres of the wool type, 1976

BOLLEN, R. E. Characteristics and uses of loess i highway construction, 2632

BOLT, R. H. *See* MORSE, P. M.

BÖMMEL, H. The measurement of the velocity an absorption of ultrasonics by an optical metho 2845

BONDI, A. Flow orientation in isotropic fluids, 2784

BONDI, H., and HOYLE, F. On the mechanism o accretion by stars, 1656

BONILLA, C. F. *See* EDWARDS, D. A.

BONNELANCE, L., and BLEULER, K. Higher order term in the diffraction of X-rays by crystals, 1516

DE BONT, M. J. *See* SCHUTTEVAER, J. W.

BOOR, L., and DIXON, J. K. Application of a therm conductivity method to the determination o moisture-vapour transmission of packaging material 653

BOOTH, A. D. A method for calculating reciproc spacings for X-ray reflections from a monoclin crystal, 2587

BOOW, J., and WALKER, G. E. The variation of apparen porosity through a slip-cast sillimanite tank-bloc 1016

BORELIUS, G. On the fluctuations producing nuclei i super-cooled solid solutions, 2813

BORELIUS, G., and GULLBERG, K. Thermo-electric pow of liquid and solidified selenium, 1840

BORELIUS, G., LARRIS, F., and OHLSSON, E. Kinetics o precipitation in Pb-Sn alloys, 2812

BORELIUS, G., PIHLSTRAND, F., ANDERSSON, J., an GULLBERG, K. Resistance of liquid and solidifie selenium, 1839

BORGNIS, F. and LEDINEGG, E. On the theory of density modulated electron beams of finite current density 2313

BORN, M. Corrigenda to the paper "On the stabilit of crystal lattices. IX. Covariant theory of lattic deformations and the stability of some hexagon lattices," 705; Unification of the theories of photo and meson, 1235

BORN, M., and PENG, H. W. Quantum mechanics o fields. II. Statistics of pure fields, 90; III. Electro magnetic field and electron field in interaction, 167

BORUFF, C. S. *See* BAUERNFEIND, J. C.; CIRCLE, S. J.

BOSCH, W. C., and ANDERSON, E. W. Performance of hydrogen arc as a source for photo-electric spectro photometry, 1361

BOSE, A. K. Faraday rotation in solutions containin ions of elements of the first transition group, 1910

BOSE, B. N. On certain transformations in generalize hypergeometric series, 787; On certain integral involving Legendre and Bessel functions, 2094

BOSE, D. M., and CHOUDHURI, B. On the variation i the experimentally determined values of the meso mass, 3049

BOSE, R. C., CHOWLA, S., and RAO, C. R. On th integral order, (mod p) of quadratics $x^2 + ax + t$ with applications to the construction of minimur functions for $GF(p^2)$, and to some number theo results, 2081

BOSE, S. N., and BASU, K. A note on Dirac equation and the Zeeman effect, 493

BOSSHARD, E. Phase contrast microscopy, 1786

OULTON, J., and JACKSON, D. L. C. The fluidity of nylon solutions in *m*-cresol. II, 1703
OUWERS, A., and VAN HEEL, A. C. S. On the luminosity of optical systems, 1363
OWDEN, F. P., GREGORY, J. N., and TABOR, D. Lubrication of metal surfaces by fatty acids, 2783
OWDEN, F. P., and MOORE, A. J. W. Adhesion of lubricated metals, 2436
OWEN, E. J. The fluorescence of naphthacene in anthracene, 2938
OX, W. A., and SCHROEDER, W. Effect of shape on the formability of deep-drawn sheet-metal parts, 667
OYCE, E. H. Eighty-one new variable stars in VSF 524 and 566, 472; *see also* SHAPLEY, H.
OYD, J., and ROBERTSON, B. P. The friction properties of various lubricants at high pressures, 1288
OYLE, A. J. *See* WHITEHEAD, T., JR.
RABENDER, G. J. Water vapour permeability of water-sensitive materials, 1017
RACKNER, A. V. *See* BANKS, W. H.
RADFORD, J. R. *See* DRICKAMER, H. G.
RADLEY, C. B., ERNST, C. E., and PASCHKIS, V. Economic thickness of thermal insulation for intermittent operation, 1791
RADSHAW, E. A change-of-capacitance method for the measurement of mechanical displacements, 1695
RADY, A. P., and ROSS, S. The measurement of foam stability, 875
RADY, L. J. Infra-red analysis of butadiene, 381
RAENDLE, H. A., and WIEGAND, W. B. Effect of moisture on curing rate of GR-S, 664; *see also* WIEGAND, W. B.
RAGA, C. A. C. Investigation of the transmutation Ra D→Ra E by magnetic spectrography of the β-radiation of internal conversion, 2378
RAGG, L. Lightning calculations with light, 393
RAID, P. E. *See* LANGILLE, R. C.
RAILSFORD, F. Magnetic materials. I–III, 2352
RANCH, G. E. K. *See* FERGUSON, L. N.; HILL, T. L.; TOLBERT, B. M.
RAND, E. *See* SOBOTKA, H.
RANDON, C. E. *See* HISEY, W. O.
RANDSTÄTTER, M. On the isomorphous interchange of the groups $-CH_2-CH_2-$, $-CH=CH-$, $-N=CH-$, $-N=N-$, 388; Isodimorphism in an alleged case of formation of mixed crystals of type Ia, 389; *see also* KOFLER, A.
RANDT, W. H. Solution of the diffusion equation applicable to the edgewise growth of pearlite, 2405
RANSON, N. G. Strain-gauge amplifier, 2164
RASS, K., and NAUMANN, K. On the fastness of oxyfisetin dyestuffs on wool, 1164
RATT, J. B., and WIGHT, K. C. The development of an automatic electric balance for research on aerodynamic stability, 886
RAUDE, E. A. The kinetics of anionotropic rearrangement. II. Medium effects in the oxotropy of propenylethynylcarbinol. The determination of isodielectric energies of activation, 337; Intensities of light absorption, 2906; Studies in light absorption. I. *p*-Benzoquinones, 2919
RAUDE, E. A., and JONES, E. R. H. The kinetics of anionotropic rearrangement. I. The rearrangement of propenylethynylcarbinol, 337; Studies in light absorption. II. 2 : 4-dinitrophenylhydrazones, 2920
RAUER, R. On the arithmetic in a group ring, 454
RAUNS, F. E. *See* JONES, G. M.
RECHT, W., and LIEBERT, E. Effect of writing inks on the strength of paper, 1032
REITNER, H. J. On concentration functions in the foaming of partially foamable solutions. I, 2186
REKHOVSKIKH, L. M. Scattering of X-rays in polycrystalline bodies. I–II, 3028
RENTANO, J. C. M. The comparative evaluation of X-ray powder patterns, 2391
REWER, A. K., and DIBELER, V. H. Mass spectrometric analyses of hydrocarbon and gas mixtures, 2892
REWER, R. E. Plastic characteristics of coal, 2429
REWSTER, R. Q., and SLOCOMBE, R. Polarization effects in aromatic ethers, 3113
REYER, B., BUCHANAN, G. S., and DUEWELL, H. The reduction potential of acridines, with reference to their antiseptic activity, 358
RIANT, R. C. A theory of adsorption towers, 2503
BRICE, B. A., and SWAIN, M. L. Ultra-violet absorption methods of analysis for polyunsaturated constituents of fats, oils and soaps, 1359
BRICKER, C. E., and JOHNSON, H. R. Spectrophotometric method for determining formaldehyde, 2863
BRICKWEDDE, F. G. *See* SCOTT, R. B.
BRIDGMAN, P. W. The stress distribution at the neck of a tension specimen, 2005
BRIGGS, L. J. Methods for measuring the coefficient of restitution and the spin of a ball, 1267
BRILLOUIN, L. A theorem of Larmor and its importance for electrons in magnetic fields, 1857
BRISTOL, K. E. *See* VINCENT, J. F.
BRITT, K. W. Observations on wet-strength paper, 748
BROADBENT, D. *See* JÁNOSSY, L.
BROCKWAY, L. O. Electron diffraction, 1861; *see also* KARLE, I. L.; SECRIST, J. H.
BRODATY, E. *See* CAHN, R. S.
BRODETSKY, S. The general motion of the aeroplane, 1316
VAN DEN BROEK, T. H. *See* SCHUTTEVAER, J. W.
BROER, L. J. G., and GORTER, C. J. Paramagnetic dispersion at radio frequencies in a few gadolinium salts, 1898
BROER, L. J. F., and SCHERING, D. C. An apparatus for the study of paramagnetic dispersion at radio frequencies, 1900
BROESE, S. *See* ERBRING, H.
BROMBACHER, W. G. Altitude by measurement of air pressure and temperature, 2726
BRONOWSKI, J. An inequality relating means, 1642
BROOM, W. E. J. Stability of fuel oil, 3140
BROSER, W., and KRÜGER, H. E. On the viscosity of mixtures of linear high-polymerized substances, 1277
BROUWER, D. Programme for the determination of systematic corrections to fundamental catalogues from observations of minor planets, 1672
BROWN, A. *See* SCATCHARD, G.
BROWN, C. Particle-size distributions by centrifugal sedimentation, 1101
BROWN, C. L. The treatment of discontinuities in beam deflection problems, 1997
BROWN, C. R. A universal apparatus for research in physiological optics, 193
BROWN, E. A. Determination of iron in the presence of cobalt. Two-component colorimetric method, 2547
BROWN, F. G. Exact addition formulae for the axial spherical aberration and curvature of field of an optical system of centred spherical surfaces, 2880
BROWN, G. G. *See* HANSON, G. H.
BROWN, G. M. *See* QUAYLE, O. R.
BROWN, H. C. Studies in stereochemistry. V. The effect of *F*-strain on the relative base strengths of ammonia and trimethylamine. VI. The effect of *F*-strain on the relative base strengths of ammonia and the methylamines, 2520; *B*-strain and base strength, 2522
BROWN, K. W., CHIRNSIDE, R. C., DAUNCEY, L. A., and ROOKSBY, H. P. Synthetic sapphires, 2066
BROWN, O. W. *See* LEWIS, R. W.; RAVENSCROFT, P. H.
BROWN, R. H. *See* NIVEN, J. I.
BROWN, R. R. A new method of determining the fraction of electrons in cosmic radiation, 625
BROWN, S. C., GOOD, W. M., and EVANS, R. D. An atmospheric pressure Geiger-Müller counter system for the study of respiratory problems, 3069
BROWN, V. *See* RASHEVSKY, N.
BROWNSETT, T., and DAVIDSON, G. F. The viscosity of dilute solutions of nitrocelluloses derived from chemically modified cotton celluloses of various types, 1704
BRUBAKER, D. G. Light and electron microscopy of pigments, 2261
BRUBAKER, D. G., and FULLER, M L. The electrical charging of electron diffraction specimens, 2317
BRUCE, C. E. R. The initiation of long electrical discharges, 1148
BRUCE, W. J. A comparison between winter temperatures at Lerwick and Kew Observatory over the period 1858–1943, 1585
BRUCKNER, W. H. *See* WILSON, W. M.
BRUES, C. T. Fluorescent staining of insect tissues, 1461
BRUNNER, W. Provisional sunspot-numbers for April, 1944, to February, 1945, 461, 1224, 1225, 2115

BRUNT, D. Climate, weather, and man, 404

BRYAN, J., and SMITH, D. N. The effect of chemicals in water solution on fire extinction, 2535

BRYANT, K. Glacial versus desert origin of loess, 2626

BUC, G. L., and STEARNS, E. I. Uses of retardation plates in spectrophotometry. I Determination of slit shape and slit width. II. Calibration of wave length. III. Measurement of dichroic samples, 2864

BUCHANAN, G. S. *See* BREYER, B.

BUCKLEY, F. Transformations of the fundamental equations of thermodynamics, 596

BUCKLEY, F., and TAYLOR, J. K. Application of the Ilkovič equation to quantitative polarography, 2539

BUENO, A. *See* VIERHELLER, F.

BUERGER, M. J. J. The design of X-ray powder cameras, 3080

BUHLER, J. S. X-ray diffraction—an industrial tool, 1980

BULGAKOV, B. V. Periodic processes in free pseudo-linear oscillatory systems, 1738

BULL, A. Soil-pressure distribution along flexible foundations, 1008

BULL, H. B. Adsorption of water vapour by proteins, 1119; Monolayers of egg albumin on concentrated salt solutions, 1299; Monolayers of β-lactoglobulin on concentrated salt solutions, 1300; Mixed monolayers of egg albumin and lauryl sulphate, 1301

BULL, H. B., and GUTMANN, M. Elasticity of keratin fibres, 1030

BULL, M. G. Hardwood columns subjected to loads of short duration, 2409

BULLOCK, T. H. Alteration of frequency of pacemaker nerve cells by imposed direct current, 252

BUNGE, M. A new representation of the types of nuclear forces, 2369

BUNN, C. W., and ALCOCK, T. C. The texture of polythene, 1983

BURAWOY, A. The constitutive changes of the covalent linkages, their nature and cause, 700

BURAWOY, A., BELL, R. P., and LONGUET-HIGGINS, H. C. Structure of boron hydrides, 2513

BURBANK, B. G. Direct and fluorescence excitation of the L_{III} level in thick targets of thorium, 620; The mean depth of production of continuous X-rays in thick targets of thorium, 622

BURFORD, W. B., III, and FRAZER, J. C. W. The poisoning of nickel hydrogenation catalysts by water vapour, 2468; The production of a poison for nickel catalysts in the absorption of oxygen by Fieser's solution, 2469

BURGENER, J. E. *See* CALLON, R. W.

BURGER, H. C., and VAN MILAAN, J. B. Measurements of the specific resistance of the human body to direct current, 2350

BURK, R. E., HUGHES, E. C., SCOVILL, W. E., and BARTLESON, J. D. Factors causing lubricating oil deterioration in engines. Laboratory evaluation, 2467

BURMAN, U. R. *See* SEN, N. R.

BURMISTER, D. M. The general theory of stresses and displacements in layered systems. I–III, 2399

BURN, J. *See* SMITH, H. A.

BURNETT, R. S., ROBERTS, E. J., and PARKER, E. D. Viscosity patterns of peanut protein solutions. Comparison with other vegetable proteins and with casein, 2772

BURR, G. O. *See* BARNES, R. H.; RUSOFF, I. I.

BURRELL, H. Polypentaerythritol drying oils, 1443

BURRIS, A., and HARGRAVE, W. J. A simple pendulum energy experiment, 104

BURT, C. Use of stereographic projection for statistical problems, 2667

BUTCHERS, E., and Hume-Rothery, W. The solubility of manganese in aluminium, 2193; On the constitution of aluminium-magnesium—manganese-zinc alloys: the solidus, 2814

BUTLER, C. C. *See* RYMER, T. B.

BUTLER, E. T., MANDEL, E., and POLANYI, M. Rates of pyrolysis and bond energies of substituted iodides. II, 2460

BYLER, W. H., and CARROLL, C. C. A method for determining the chromaticity of fluorescent material, 2248

BYRAM, G. M. The physical and photochemical basis of visual resolving power. I. The distribution of illumination in retinal images, 930; II. Visual acuity and the photochemistry of the retina, 1444

BYRNE, J. B. *See* KANNING, E. W.

BYSTRÖM, A. X-ray studies on lead sesquioxide, Pb_2 3126; X-ray analysis of $Ca_2Sb_2O_7$ and compou of similar composition, 3129

CAFFYN, J. E. A study of constant-stress rheomet 1037

CAFFYN, J. E., and BLAIR, G. W. SCOTT. Significance power-law relations in rheology, 2426

CAGNIARD, L. Electrical equilibrium of an ioni atmosphere (theoretical distribution with height, the electric field, the conductivity and the ionizat density), 728

CAHN, R. S., PHIPERS, R. F., and BRODATY, E. stability of derris in insecticidal dusts. The solve powder effect, 2510

CALBICK, C. J. Historical background of elect optics, 1519

CALDIN, E. F. The relation between the brightness temperature of a total radiator, 2862

CALDWELL, B. P. *See* HAHN, C.

CALEY, E. R. Determination of the capacity of shal jars, 2764

CALINGAERT, G., SOROOS, H., HNIŽDA, V., and SHAPI H. Hexamethylethane, 945

CALINICENCO, N. *See* GHEORGHIU, V. G.

CALLON, R. W., and BURGENER, J. E. Modifications spectrographic methods for analysis of alumin and its alloys, 703

CALVO, L. L. *See* PALACIOS, J.

CAMERON, R. H., and MARTIN, W. T. An expres for the solution of a class of non-linear inte equations, 789; The Wiener measure of Hil neighbourhoods in the space of real continu functions, 1650

CAMM, G. L., and MILNE, E. A. The two-body grav tional problem in kinematical relativity, 2738

CAMPBELL, D. J. *See* REICHERT, J. S.

CAMPBELL, H. C. *See* ROZENTAL, D.

CAMPBELL, J. A. Distribution equation, 2442

CAMPBELL, J. R. "Temp-turb" temperature-con system, 219

CAMPBELL, L. Observations of variable stars by American Association of Variable Star Observ 2119, 2120; Fourth outburst of Nova (T) Pyx 2121

CANNON, C. G., and GEORGE, W. H. Coefficient restitution of coals, 3084

CANNON, C. G., and SUTHERLAND, G. B. B. M. infra-red absorption spectra of coals and extracts, 1413; Infra-red spectra of coals, 2924

CANNON, H. G. On Chlorazol Black E and some o new stains, 203

CANNON, M. R. Viscosity measurement, 1281

CAPPELL, R. G., HAMMERSCHMIDT, E. G., and DESCH W. W. Dehydration of commercial gases by s adsorbents, 1115

CARAPELLA, L. A., and KAISER, H. F. An autom precision space-indicating X-ray back-reflec instrument, 3079

CARDSWELL, T. S., and NASON, H. K. Effect of envi mental conditions on mechanical properties organic plastics, 657

CARL, F. *See* CLARK, G. L.

CARL, L. R. The breaking of multiple bonds and primary detonating explosives, 1056

CARLENE, P. W. The moisture relations of textiles. survey of the literature, 2025

CARLIN, H. J. The Fourier integral as an engine tool, 2675

CARLISLE, R. W., and MUNDEL, A. B. Practical hea aid measurements, 545

CARLSON, F. Some inequalities concerning ana functions, 52

CARLSON, F. E., and POTTER, W. M. A recording m photometer: its application to the design of refle type gunsights, 1754

CARNE, J. B. Avoidance of glare, 2960

CARR, H. Thermal diffusion in liquids, 140

CARRIER, G. F. The bending of the cylindri aeolotropic plate, 498; The bending of the cla sectorial plate, 848; The thermal-stress and b force problems of the infinite orthotropic solid,

CARROLL, C. C. *See* BYLER, W. H.

CARSON, F. T. *See* BOGATY, H.

ARSTEN, H. R. F. The capacitance and thermal conductance of screened multi-pair systems in high-frequency cables, 2146

ARSTEN, H. R. F., and McKERROW, N. W. The tabulation of some Bessel functions $K_\nu(z)$ and $K^1_\nu(z)$ of fractional order, 1197

ARSWELL, T. S. *See* LAWTON, T. S., JR.

ARTER, F. W. Sighting of anti-aircraft guns, 105

ARTER, G. K. Numerical and network-analyser solution of the equivalent circuits for the elastic field, 843

ARTER, G. K., and KRON, G. A.c. network-analyser study of the Schrödinger equation, 1240

ARTER, W. C. *See* SCHNEIDER, W. C.

ASE, R. A. M. Inverse binomial sampling, 2688

ASIMIR, H. B. G. On the transition of a sphere from the supraconducting to the normal state, 1509

ASSEL, H. M. Cluster formation and phase transitions in the adsorbed state, 366; Physical aspects of foaming in steam generation, 1724; On the possibility of estimating the average surface area of solid particles, 2762

ASSIE, A. B. D. Multimolecular absorption, 3111; Absorption of water by wool, 3112; *see also* BAXTER, S.

ASSIE, A. B. D., and BAXTER, S. Wettability of porous surfaces, 515; Large contact angles of plant and animal surfaces, 1720

ASTELL, H. C., DILNOT, S., and WARRINGTON, M. Reaction between solids, 672

ATLIN, F. H. Measuring taper and tension, 855

ENTER, E. J., and MACINTOSH, R. M. Spectrophotometric determination of small amounts of copper using rubeanic acid, 2222

ESCO, C. U., CHANDRASEKHAR, S., and SAHADE, J. On the radiative equilibrium of a stellar atmosphere. IV, 2137

ESCO, C. U., and SAHADE, J. The spectroscopic orbit of SVS 923 Herculis, 2711

ESCO, C. U. *See also* SAHADE, J.; STRUVE, O.

HAGAS, C., GONÇALVES, J. M., and MACHADO, A. L. On the use of a multivibrator as a Geiger-Müller counter external quenching circuit, 291

HAKRABARTY, S. K. On the convergency of the solutions of cascade equations in cosmic radiation, 67; Photons associated with a cascade shower, 2340

HALMERS, J. A. Electric fields below clouds, 2041; *See also* WHIPPLE, F. J. W.

HALMERS, T. A., GOODWIN, T. W., and MORTON, R. A. Action of ionizing radiations on carotene and vitamin A, 1961

HAMBERLAIN, N. H. *See* SPEAKMANN, J. B.

HAND, R. *See* MUZAFFAR, S. D.

HANDRASEKHAR, S. Some remarks on the negative hydrogen ion and its absorption coefficient, 825; On the radiative equilibrium of a stellar atmosphere. II, III, 829, 830; V, 2723; The negative ions of hydrogen and oxygen in stellar atmospheres, 2718; *see also* CESCO, C. U.; WILDT, R.

HANDRATRAYA, M. L., and KAPREKAR, D. R. Distribution of the types of the product of two demlo-numbers, 1181

HANG, C. K. *See* KIRKPATRICK, P.

HANG, S. C. Some theorems on ruled surfaces, 36

HANG, S. L. The turbulent flow through a circular pipe, 2790

HANG, S. T. *See* WOO, S. C.

HANG, T. L. Distribution of iodine between heavy water and carbon tetrachloride, 1047

HANG, T. S. A note on the Hamiltonian theory of quantization, 1243

HANG, W. Y. A study of the alpha-ray spectra by the cyclotron magnet, 1947; Short-range alpha-particles from Po, 1948; *see also* WANG, C. S.

HANG, W. Y., and ROSENBLUM, S. A simple counting system for alpha-ray spectra and the energy distribution of Po alpha-particles, 1942

HANG, W. Y., and WANG, C. S. Analysis of beta-disintegration data. II. The probability of beta-disintegration and the complexity of the atomic nuclei, 295

HAO, K. T. The penetration of high-energy electrons through foils, 266

HAO, K. T., and TANG, T. Y. Electron temperatures in electrical discharges, 3021

HAPMAN, S. Linearity of d.c. vacuum-tube voltmeters, 631

HARIAR, V. R. On the harmonic locus of two given quadrics, 25; On certain sequences of integers no one of which is divisible by any other, 424; On scrolls generated by lines whose polars with regard to a pencil and a net of quadrics are concurrent, 2088

HARLES, D. Electron multipliers with magnetic focusing, 618

HARLESBY, A. Structure of the photon, 2215

HASTON, J. C. Some effects of oxygen in silver and silver alloys, 1979

HATELET, F. On the notion of equivalence in the sense of Poincaré, 435

HATTERJEE, B. *See* MUKHERJEE, J. N.

HATTERJEE, L. M., and PRASAD, K. N. Optical constants of tungsten and antimony determined by reflected polarized light, 184

HATTERJEE, S., and DUTT, N. Sound absorption characteristics of Indian materials. I, 1747

HAUDET, E. The stability of the silver-disk pyrheliometer, 2035

HAUDHRI, R. M., and AHMAD, A. Neutralization of space-charge of hot metals by positive ions of potassium, 3026

HAUDHURI, R. M., and ZUBERI, S. H. On the cathode dark-space of a glow discharge in gases at low pressures, 3025

HAUSSÉ, Scaling and measurement by a stereo-radiographic transposition method, 2397

HEN, K. K. On the convergence of the conjugate series of a Fourier series, 46

HEN, P. P. Dyadic analysis of space rigid framework, 1188

HENG, M. T. On strong summability of Fourier series, 48

HERN, S. S. On the invariants of contact of curves in a projective space of N dimensions and their geometrical interpretation, 31; On a Weyl geometry defined from an $(n-1)$- parameter family of hypersurfaces in a space of n dimensions, 41; Laplace transforms of a class of higher dimensional varieties in a projective space of n dimensions, 57; Integral formulae for the characteristic classes of sphere bundles, 779

HESTERS, J. H. Abrasion of porcelain balls, 2431

HEVALLEY, C. On groups of automorphism of Lie groups, 793

HICK, A. J. *See* LYNN, J. G.

HIEN, W. Z. The intrinsic theory of thin shells and plates. I. General theory. II. Application to thin plates. III. Application to thin shells, 1255

HIH-EN, G. A note on the charge produced by spraying liquids with a jet of air, 3013

HILDS, E. C. The water table, equipotentials and streamlines in drained land, 410; A note on electrical methods of determining soil moisture, 412

HINN, H. A., and EISENBERG, P. Tonal-range and sound-intensity preferences of broadcast listeners, 2850

HIPLONKAR, V. T. On some aspects of the modern researches on positive rays, 2325

HIRGWIN, B. H., and FLINT, H. T. Dirac's equation for the neutron and proton, 2749

HIRNSIDE, R. C. The chemistry of plastics, 759; *see also* BROWN, K. W.

HODAT, F., and CORTESI, R. Apparatus for the study of osmosis between aqueous and alcoholic phases, 139

HOONG, S. P. Influence of ultra-violet radiations on the etching of quartz, 160; Orientation of the etching figures of quartz, 386; Coloration and luminescence produced by radium rays in the different varieties of quartz, and some optic properties of these varieties, 1004; New etching pattern of quartz and its uses for the determination of electric axes and the detection of crystalline defects, 3123

HOU, P. Y. Pressure flow of a turbulent fluid between two parallel infinite planes, 1291; The turbulent jet, 1292; On an extension of Reynolds' method of finding apparent stresses and the nature of turbulence, 1318

HOUDHURI, B. Mass determination of the ionizing particles recorded in photographic plates exposed to cosmic rays, 623; *see also* BOSE, D. M.

CHOUDHURI, K. On the polarized fluorescence—dyestuffs in solution, 914

CHOUDHURY, A. C. The invariants of webs of curves in R_n, 778

CHOW, K. T. *See* JEN, G. K.

CHOWLA, S. *See* BOSE, R. C.

CHRISTIAN, S. M. *See* JONES, G.

CHROMCHENKO, L. M. *See* ALKHAZOV, D. G.

CHU, H. C. *See* TSIEN, L. C.

CHUNG KWAI LUI. Absorption and excitation of zinc silicate phosphors, 2893

CHURCHILL, J. R. Techniques of quantitative spectrographic analysis, 1375; Analytical applications of emission spectrometry, 1762

DE CICCO, J. *See* KASNER, E.

CIRCLE, S. J., STONE, L., and BORUFF, C. S. Acrolein determination by means of tryptophane. A colorimetric micromethod, 2550

CLARK, G. L., KAYE, W. I., SEABURY, R. L., and CARL, F. Spectrophotometric study of the oxidation of quenching oils, 1362

CLARKE, E. T., and IRVINE, J. W., JR. Nuclear excitation functions. I. $Na^{23}(d,p)Na^{24}$, $Br^{81}(d,p)Br^{82}$, and Br $(d,2n)$Kr(34 hr.), 1007

CLARKE, S. G. End point indication of the B.N.F. jet test for measurement of thickness of zinc coatings on steel, 2154

CLASH, R. F., JR., and BERG, B. M. Stiffness and brittleness of non-rigid vinyl-chloride–acetate-resin compounds, 658

CLAY, J., DEKKER, A. J., and HEMELRIJK, J. The absolute value of the dielectric constant of liquids, 1506

CLAY, J., and HOOFT, C. G'T. Cosmic radiation bursts and extensive showers, 1522

CLAY, J., and VENEMA, A. The production of soft electronic radiation by mesonic collisions, 1525

CLAYPOOLE, W., and COOK, D. B. The nature of static friction, 1039

CLEGG, R. R. Drying and dryers, 1156

CLEVELAND, F. F. A method for obtaining depolarization factors of Raman lines, with results for carbon tetrachloride and toluene, 2252; *see also* MEISTER, A. G.

CLOCK, R. C. *See* MRGUDICH, J. N.

COATES, G. E. The acid corrosion of magnesium, 3106

COBLENTZ, W. W., and STAIR, R. A daily record of ultra-violet solar and sky radiation in Washington, 1941 to 1943, 408

COBURN, N. A boundary problem in plane plasticity, 63; A boundary value problem in plane plasticity for the Coulomb yield condition, 1203

COCHRAN, D., and SAMSEL, R. W. Ultrasonics, 538

CODWISE, P. W. Determination of the erasing qualities of paper, 2432

COE, J. R., and GODFREY, T. B. Viscosity of water, 114

COHEN, P., and REID, W. T. The flow of coal-ash slag on furnace walls, 1702

COHEN, S. G. The effects of temperature on the polymerization of styrene, 1565

COLASANTI, J. Quality control inspection, 450

COLE, O. D. *See* HARRISON, S. R.

COLE, R. *See* WOOSTER, W. A.

COLEMAN, F. F. *See* DACUS, E. N.

COLES, H. W., DEUBERRY, H., and CURRY, F. P. The use of Columbia resin No. 39 as an optical cement, 761

COLLACOTT, R. A. The design and production of pressure gauges, 2769

COLVIN, J. H. *See* JONES, G.

COMINGS, E. W., MAYLAND, B. J., and EGLY, R. S. The viscosity of gases at high pressures, 1313

COMMON, R. H. Application of the chemiluminescence test for haematin to plant tissues, 2946

LE COMPTE, G. C. *See* CREELY, J. W.

COMPTON, A. H. On the fluctuations of cosmic rays, 2344

COMRIE, L. J. Recent progress in scientific computing, 69

CONANT, F. S., and LISKA, J. W. Some low-temperature properties of elastometers, 1991

CONCORDIA, C. Network- and differential-analyser solution of torsional oscillation problems involving non-linear springs, 1325

CONDON, E. U. *See* HIPPLE, J. A.

CONDON, F. E. *See* BARTLETT, P. D.

CONE, W. H. The reduction of peroxydisulphate by cerous ion, catalysed by silver nitrate, 1568

CONN, G. K. T. A thermocouple-bolometer detector, 1483

CONRAD, C. M. *See* PHILIPP, H. J.

CONRAD, H., and HAEFELI, R. Reconstruction of the Castieler viaduct on the Chur-Arosa line of the Rhaetic railway. The theory of earth creepage pressure, 3136

CONVEY, J., and OLDFIELD, J. H. A microspectrographic method for the quantitative analysis of steel segregates, 2552

CONWAY, A. W. Quaternions and matrices, 1241

COOK, D. B. *See* CLAYPOOLE, W.

COOK, S. R. Planck's universal constant of action, 490

COOK, W. H. *See* STEEVES, T. A.

COON, J. B. A difficulty in analysis of some ClO_2 bands, 1405

COOPER, C. M., FERNSTROM, G. A., and MILLER, S. A. Performance of agitated gas-liquid contactors, 329

COOPER, J. L. B. Operators in quantum theory, 2742

COPELAND, P., and SPARING, W. H. Stability of low-pressure mercury arcs as a function of current, 1846

COPELAND, P. L. Design of a pool-type cathode for an arc operating at low currents, 3046

COPPICK, S. Viscosity and molecular weight. III. The heterogeneity coefficient, 1706; IV. Acid and basic methods, 2170

CORBEN, H. C. A classical theory of electromagnetism and gravitation, 3056

CORDOVI, M. A. *See* SPRARAGEN, W.

CORK, J. M. Gamma-ray absorption, 1957

CORK, J. M., and PIDD, R. W. The absorption of gamma-radiation in copper and lead, 1003

DI CORLETO, C. Comparison of thermodynamic diagrams of the atmosphere, mostly used in meteorology 1143

CORNELIUS, J. The use of radio-frequency apparatus in inspection, 2760

CORNFIELD, G. M. *See* SPARKES, S. R.

CORNOG, I. C. A lens for a miniature camera, 2266

CORNWELL, R. T. K. New apparatus for determining the water vapour permeability of sheet materials, 2646

CORRINGTON, M. S., and MIEHLE, W. Tables of Bessel function $J_n(x)$ for large arguments, 2092

CORTESI, R. *See* CHODAT, F.

COSTA RIBEIRO, J. On the bridge method for the measurement of cosmic rays with ionization chambers, 2329

COSTER, D., DE VRIES, H., and DIEMER, G. The resonance levels for neutron capture. II. III. Scattering of resonance neutrons. IV. Overlapping of levels, 1541, 1542, 1543

COSTER, N. W., and VINCENT, R. Some aspects of α-cellulose from wood, 1158

COTTON, C. A. Volcanic contribution to the atmosphere and ocean, 401

COTTRALL, L. G., and GARTSHORE, J. L. Relationship between the bursting strengths of laboratory-made and mill-made paper, 320

COULL, J. *See* HAY, R. G.

COULSON, C. A., and BELL, R. P. Kinetic energy, potential energy and force in molecule formation, 1920

COULSON, C. A. *See also* DUNCANSON, W. E.

COULSON, E. A., and WARNE, R. J. Automatic pressure regulation in vacuum distillation, 376

COURANT, R. Variational methods for the solution of problems of equilibrium and vibrations, 1647

COURTOIS, J. Representation of a system of identical particles by a symmetrical wave function, 494; Representations of an unlimited number of particles, 495

COWGILL, A. P. The mathematics of weir forms, 1293

COWIE, D. B., and KSANDA, C. J. Arc-ion source with direct-current filament supply for 60-inch cyclotron, 3071

COWLING, T. G. The electrical conductivity of an ionized gas in a magnetic field, with applications to the solar atmosphere and the ionosphere, 2301

COX, A. Phase-retarding areas, 1785

COX, A., and MARTIN, H. W. The assessment of lenses, 898

X, R. T. Momentum and energy of photon and electron in the Cerenkov radiation, 619
ABTREE, J. J., EATON, G. T., and MUEHLER, L. E. The quantitative determination of hypo in photographic prints with silver nitrate, 765
AFT, C. H., and MAKEPEACE, G. R. Colorimetric estimation of aluminium in aluminium steel, 2546
AGGS, J. D. Geiger counters, 649
AGGS, J. D., and MEEK, J. M. Afterglow effects in high-pressure gases, 3023
AGGS, J. W. Heat conduction in semi-infinite cylinders, 2971
AIG, D. P., and SHORT, L. N. Absorption spectra of acridines. I. Some aminoacridines, 2931
AIG, L. C., and POST, O. W. Improved apparatus for solubility determination or for small-scale recrystallization, 143
AMLET, C. M. *See* INGRAM, W. H.
ANE, H. R. Direct centrifugation onto electron microscope specimen films, 1100
AVEN, E. C. A study of the comparative method of determining gaseous refractivities, 1373
AWFORD, D. V. *See* BARROW, R. F.
ELY, J. W., LE COMPTE, G. C., and LUCASSE, W. W. A note on the symmetry of certain thermodynamic relations, 965
INER, H. E., MCCANN, G. D., and WARREN, C. E. A new device for the solution of transient-vibration problems by the method of electrical-mechanical analogy, 2840
ITTENDEN, E. C., JR., and MCDANIEL, B. D. Production of uniform magnetic field by a pair of magnetic dipoles, 992
ITTENDEN, E. C., JR., and SHIPLEY, R. E. An electronic recording flowmeter, 1295
ITTENDEN, E. C., JR. *See also* OLSEN, L. O.; Smith, C. S.
OFT, A. R. Snow melting and evaporation, 1145
OSS, P. C., and NIXON, E. R. Criteria for resolution and the resolving power of absorbing prisms, 559
OSSWHITE, H. M. *See* DIEKE, G. H.
OWFOOT, D., and SCHMIDT, G. M. J. X-ray crystallographic measurements on a single crystal of a tobacco necrosis virus derivative, 2593
UICKSHANK, F. D. A system of transfer coefficients for use in the design of lens systems: I. The general theory of the transfer coefficients. II. A second-order correction term. III. The contributions to the image aberrations made by the individual surfaces of a lens system. IV. The estimation of the tolerances permissible in the production of an optical system. V. Transfer coefficients for the astigmatism at small aperture and finite obliquity, 2876, 2877, 2878, 2879; *see also* M'AULAY, A. L.
UTCH, L. S. The measurement of crosstalk in telephone apparatus with an artificial voice and a weighted transmission measuring set, 2210
ULLEN, R. T. *See* JONES, H. SPENCER
UPPLES, H. L. The surface tensions of calcium chloride solutions at 25° C. measured by their maximum bubble pressures, 2797
URRAN, B. C. *See* LEIS, D. G.
URRY, F. P. *See* COLES, H. W.
WILONG, B. M. Sublimation in a Wilson chamber, 2273

ACUS, E. N., COLEMAN, F. F., and ROESS, L. C. A new experimental approach to the study of boundary lubrication, 1711
ACUS, E. N. *See also* ROESS, L. C.
AHM, C. H. *See* WEBER, A. H.
AKIN, T. W. *See* WORKS, C. N.
ALE, B. *See* WILLIAMS, D.
ALE, E. B. *See* NIELSEN, J. R.
ALLENBACH, W. Reciprocity theorem of the electromagnetic field, 1907
'AMOUR, F. E. A working model of the human circulation, 1151
ANIEL, A. W. T. Extension of the wedge theory of earth pressure, 2062
ANIELS, H. E. The statistical theory of the strength of bundles of threads. I, 2100
ANIELSON, G. C., and LANCZOS, C. Some improvements in practical Fourier analysis and their application to X-ray scattering from liquids, 1853
DARLING, D. A. The diffusion problem and the theory of connected events, 1216
DARROW, K. K. The concept of entropy, 228
DART, S. L., and GUTH, E. Rise of temperature on fast stretching of Butyl rubber, 2406
DART, S. L. *See also* MROWCA, B. A.
DAS GUPTA. *See* GUPTA, DAS
DATTA, N. B. *See* RAYCHAUDHURI, S. P.
DAUBERT, B. F. *See* FILER, L. J., JR.
DAUDIN, J. Cosmic radiation observed at the Col du Lautaret, Hautes-Alpes, 3053
DAUNCEY, L. A. *See* BROWN, K. W.
DAVEY, E. P., and GAUNTLETT, M. D. Spectrographic plates of substantially uniform contrast in the ultraviolet, 2655
DAVID, W. T. The abnormality of flame gases, 1481
DAVID, W. T., MANN, J., MOBBS, F. R., and PAYMAN, W. Non-luminous flame gases, 2275
DAVIDSON, A. W., SISLER, H. H., and STORNNER, R. The system acetic-acid–ammonia, 330
DAVIDSON, G. F. *See* BROWNSETT, T.
DAVIES, C. N. A capillary viscometer with variable rate of shear, 2175; Definite equations for the fluid resistance of spheres, 2793
DAVIES, C. W. The extension of dissociation of salts in water. X. Dissociation minima, 2472
DAVIES, D. D. *See* TEMPLETON, D. H.
DAVIES, D. S., HINSHELWOOD, C. N., and PRYCE, J. M. Studies in the mechanism of bacterial adaptation, 732
DAVIS, H. S., and WIEDEMAN, O. F. Physical properties of acrylonitrile, 2729
DAVIS, L. E. Measurements of *p*H with the glass electrode as affected by soil moisture, 411
DAVIS, R. O. E., and HARDESTY, J. O. Organic material and ammonium nitrate in fertilizer mixtures, 1805
DAVIS, T. W. *See* SAFFER, A.
DAVISON, A. E. Meteorological service for electric power systems, 1142
DAVISON, J. A. The molecular condition of phenols in benzene solution, 2443
DAVISSON, C. J., and HAWORTH, F. E. Double Bragg reflections of X-rays in a single crystal, 1517; 1854
DAVY, N. The field between equal semi-infinite rectangular electrodes or magnetic pole-pieces, 1196; Ten two-dimensional electrostatic problems, 3008
DAVYDOV, B. The electric breakdown and cumulative ionization, 3047
DAVYDOV, B., and GUREVICH, B. Voltage fluctuations in semi-conductors, 1837
DAVYDOV, B., and SHMUSHKEVITCH, I. Electrical conductivity of semi-conductors with an ionic lattice in strong fields, 247
DAWSON, C. R. *See* AMES, S. R.
DAWSON, I. M. *See* MITCHELL, S.
DAY, R. A. *See* QUAYLE, O. R.
DAYAL, B. The specific heat of metals crystallizing in the cubic system, 384; Theory of the thermal expansion of the alkali halides, 584; Lattice spectrum, specific heat, and thermal expansion of lithium and sodium fluorides, 591; The specific heats of the alkali halides, 593; The specific heat of metallic silicon, 594; The thermal expansion of metals at low temperatures, 942; The theory of the thermal expansion of diamond, 943
DEACON, E. L., and EDGEWORTH, K. E. Red shift in the anagalactic nebulae, 2134
DEACON, G. E. R. *See* EKMAN, V. W.
DEAN, R. B. The diffusion of ions in supporting electrolytes, 2470
DEAN, W. R. Note on the shearing motion of fluid past a projection, 1712
DEANE, C. W. Kinetics in acid media: the correlation of reaction rates with acidity function, 2457
DECKER, B. F. A simple vector method for the determination of orientations of cubic single crystals from back-reflection X-ray photographs, 395; The validity of the pole figure, 2584
DECKER, F. W. Cloud heights by solar observation, 2040
DECKER, J. P. Effect of temperature on photosynthesis and respiration in red and loblolly pines, 2490
DEDMAN, A. J. Mechanically stirred melting-point apparatus, 212

DEE, T. P. The partial pressure of carbon dioxide over aqueous solutions containing caustic soda and sodium carbonate, 1801; Heat values in the system SO_3–H_2O, 1811

DEHART, R. C. Moment-distribution analysis for three-dimensional pipe structures, 1249

DEKKER, A. J. *See* CLAY, J.

DELBRUCK, M. *See* ANDERSON, T. F.

DELFINO, O. P. Structural vibrations of the aeroplane, 1321

DELOLLIS, N. J. *See* MANOV, G. G.

DELPECH, S. A. Iron-carbon equilibrium diagrams, 1043

DEMEREC, M. *See* ANDERSON, T. F.

DEMERS, P. The second law and the quantum theory, 3005

DEMPSTER, W. T. Visual factors in microscopy, 1445; Principles of microscope illumination and the problem of glare, 1460

DENARD, L. F. *See* GROSS, B.

DENBIGH, K. G. Electron mobility in large molecules, 641; Velocity and yield in continuous-reaction systems, 674

DENISON, A. B., and GREEN, H. D. Apparatus for continuous cross-transfusion or for continuous mean blood flow measurement, 2178

DEO, P. G. Influence of the intensity of irradiation on the new light-effect in chlorine under electrical discharge, 982

DEPOY, S. M. Effect of grain size and sub-zero treatment on productivity of four high-speed steels, 1033

DÉRIBÉRÉ, M. Coloration of fluorescent tubes and production of white light, 2956

DESCHNER, W. W. *See* CAPPELL, R. G.

DESHMUKH, G. S. *See* JOSHI, S. S.

DEUBERRY, H. *See* COLES, H. W.

DEUSCHLE, G., KLING, W., and SIMON, G. Ce-Es process for bleaching goods containing cotton and mixtures of cotton and "zellwolle"; principles and practical operation, 2067

DEUTSCH, A. J. Recent progress in astrophysics: M. Waldmeier's work on the corona, 2702

DEUTSCH, A. J. *See* STRUVE, O.

DEUTSCH, M., ELLIOTT, L. G., and EVANS, R. D. Theory, design, and applications of a short-magnetic-lens electron spectrometer, 265

DEUTSCH, W. On the pseudo-plastic state, 3074

DEVEREUX, F. L. Gramophone needle buzz, 158

DEWEY, J. M. Theory of filler reinforcement, 2009

DEXTER, R. V. The diurnal variation of warm-frontal precipitation and thunderstorms, 1587

DHARMATTI, S. S. *See* PRASAD, M.

DIBELER, V. H. *See* BREWER, A. K.

DICKERMAN, G. K. High-strength phenolic paper laminates, 753

DICKEY, F. P. *See* SMITH, A. W.

DIEKE, G. H., and CROSSWHITE, H. M. Direct intensity measurements of spectrum lines with photo-multiplier tubes, 2865

DIEMER, G. *See* COSTER, D.

DIETERT, H. W. *See* HASLER, M. F.

DIETZ, T. J. *See* MAST, W. C.

DIETZEL, A. Relationships between surface tension and structure of glass melts, 1297

VAN DIJK, H. Caloric data deduced from measurements of the susceptibility of $Gd_2(SO_4)_3 \cdot 8H_2O$ compared with calorimetric results, 1809

VAN DUKE, S. E. A. *See* MCLAUGHLIN, D. B.

DILLON, J. H., and PRETTYMAN, I. B. The effects of temperature and humidity on the physical properties of tire cords, 2076

DILNOT, S. *See* CASTELL, H. C.

DINGLE, H. The laws of nature, 94; A relativistic theory of temperature radiation, 208; On the dimensions of physical magnitudes (fifth paper), 835; *see also* EDGEWORTH, K. E.

DINGLE, H., MILNE, E. A. Kinematical relativity and the nebular red-shift, 2111

DINICHERT, P. The dielectric constant of NH_4Cl at the transformation point, 2983; Hysteresis of the NH_4Cl transformation, 2984

DIRAC, P. A. M. Unitary representations of the Lorentz group, 1242

DIXEY, F. On the normal faulting of Rift Valley structures, 2622

DIXON, J. K. *See* BOOR, L.

DOBROWSKY, A. On the heat of adsorption of heat-coagulated ferri-(III)-hydroxide sol, 223

DOCK, E. H. *See* ARCHENHOLD, G. H.

DODD, L. E. The spirotron, 614

DODGE, W. G. Use properties of newsprint, 746

DÖHLE, W. A century of mercerizing, 1013

DOLE, M., and JENKS, G. Isotopic composition of photosynthetic oxygen, 1096

DOLNICK, A. A. *See* MAYO, F. R.

DOLPH, C. L. Non-linear integral equations of the Hammerstein type, 1631

DONALDSON, J. W. Properties of metals and alloys at sub-zero temperatures, 666; Non-destructive testing of metals and alloys, 2396

DONNELL, L. H. A chart for plotting relations between variables over their entire real range, 70; Some refinements in methods of graphical integration, 446

DONOHUE, J., HUMPHREY, G. L., and SCHOMAKER, V. The structure of spiropentane, 2318

DONOHUE, J. *See also* LU, C. S.

DONOVAN, A. F., GOLAND, M., and GOODIER, J. N. The structural efficiency of wing covers, 2149

DONOVAN, G. E. The electron microscope: its application to medicine, 3040

DORSEY, N. E. The velocity of light, 1352

DORST, P. W. A novel graphical system for representing tone-reproduction data, 764

DOTY, P. *See* ALFREY, T.

DOTY, P. M. Dissociation of methyl chloride on a hot filament, 1121

DOTY, P. M., AIKEN, W. H., and MARK, H. Water vapour permeability of organic films, 1547

DOTY, P. M., and MAYER, J. E. The electron affinity of bromine and a study of its decomposition on hot tungsten, 267

DOTY, P. M., ZIMM, B. H., and MARK, H. An investigation of the determination of molecular weights of high polymers by light scattering, 2507

DOUB, L. *See* VANDENBELT, J. M.

DOWLING, J. J. Centrifugal gas specific gravity meter, 2766

DOWNES, R. G. The use of the hydrometer for the mechanical analysis of soils, 2643

DOWNIE, E. G. Electronic counter and tachometer, 859

DOZIER, C. T. Loss of weight by rotation, 1692; Gravitational ground speed indicator, 1694

DRABKIN, D. L. The extension of spectrophotometric technique by means of special type cuvettes, 1358; A new form of photo-electric spectrophotometer, 1752

DRESDNER, R. D. *See* SIMONS, J. H.

DRESEL, E., and HINSHELWOOD, C. N. The kinetics of the sulphonation of some aromatic compounds by sulphur trioxide, 1059

DREYER, J. F. Compreg as a laminated wood and as a plastic, 1595

DRICKAMER, H. G., and BRADFORD, J. R. Vapour-liquid equilibrium constants for benzene, toluene and methylcyclohexane, 2441

VAN DRIEST, E. R. Experimental investigation of turbulence diffusion—a factor in transportation of sediment in open-channel flow, 2786

DRUCKER, C. Partial specific volumes in binary and tertiary solutions, 2765

DRUCKER, M. A. Determination of lateral passive soil pressure and its effect on tunnel stresses, 1009

DRURY, G. W. Thermocouple wire fitment bending jig, 217

DRYDEN, E. C., REID, J. D., and ARONOVSKY, S. I. Effect of repeated treatment of corncob lignin by the 72% sulphuric acid method, 882

DUBAS, C. *See* KOLLBRUNNER, C. F.

DUBE, G. P., and JHA, S. N. On the theory of emission of alpha-particles from radioactive nuclei, 651

DUBERG, J. E. *See* WILSON, W. M.

DUDDING, B. P., and JENNETT, W. J. Quality control when manufacturing to specification, 791

DUDLEY, L. P. The development of stereoscopic photography and radiography, 3147

DUEWELL, H. *See* BREYER, B.

DUFFIEUX, P. M. Harmonic analysis of optical images, 2231

DULEY, F. L. Infiltration into loess soil, 2630

DUNCAN, A. B. F. *See* LAWSON, M.

UNCAN, W. J. Some devices for the solution of large sets of simultaneous linear equations. (With an appendix on the reciprocation of partitioned matrices), 776
UNCANSON, W. E., and COULSON, C. A. Theoretical shape of the Compton profile for atoms from H to Ne, 1938
UNLAP, H. F. On the quantization of probability, 95
UNLAP, W. C., JR. Measurement of the specific ionization of fast mesotrons with an ionization chamber and a linear amplifier, 1880
UNLAP, W. C., JR., and MAKOWER, B. Radio-frequency dielectric properties of a cellulosic system at low moisture contents, 602
UNN, B. A photographic method of deriving isoclinics in photo-elastic methods, 2951
UNN, C. G. Probability method applied to the analysis of recrystallization data, 1131
URANT, N. J. An application of the method of finite-difference equations to a problem of bending moments. (Continuous beam of N equal spans under uniform loading.) 1250
USHMAN, S. Mass-energy relation, 1234
UTKA, J. Transversality in higher space, 1190
UTT, N. *See* CHATTERJEE, S.
UTTA, A. K. Magnetic studies on molybdenite, 1896; Effect of temperature on magnetic susceptibility of molybdenite crystals, 3060
UTTON, H. J. Adsorption analysis of colourless compounds: method and application to the resolution of stearic and oleic acids, 169
WYER, R. J. Solar concentration of the hydroxyl radical, 2117
WYER, R. J., and OLDENBERG, O. The dissociation of H_2O into H + OH, 344

ASTMOND, E. J. A useful tool for shaping spectrographic graphite electrodes, 563
ATON, B. C. *See* RICHTER, C. P.
ATON, G. T. *See* CRABTREE, J. I.
BLIN, L. P *See* TULLER, E. F.
DDINGTON, A. S. The recession-constant of the galaxies, 1654
DDY, C. E., and FARRANT, J. L. Air absorption corrections for soft X-rays, 259
DGE, S. R. H., and MCKENZIE, H. M. Colour measurement for control and research in paper-making, 191
DGE, W. L. The identification of Klein's quartic, 29
DGELL, W. F. The intensity and polarization of Raman lines, 2253; Intensity and polarization of Raman lines and the form of molecular vibrations, 2254
DGEWORTH, K. E., DINGLE, H. Boundaries of space and time, 87
DGEWORTH, K. E. *See also* DEACON, E. L.
DLÉN, B. Position of the terms ls_3 and ls_2 and magnitude of the limit splitting in the spectrum of radon, RnI, 564; Quadrupole lines in the arc spectra of the inert gases, 565
DMONDSON, F. K., and GICLAS, H. L. BN Monocerotis: an N-type variable, 474
DMUNDS, I. G. *See* OWEN, E. A.
DRIDGE-GREEN, F. W. Persistence of vision, 1778
DSALL, J. T., GORDON, C. G., MEHL, J. W., SCHEINBERG, H., and MANN, D. W. Studies on double refraction of flow. I. An apparatus for the study of double refraction of flow at high velocity gradients, 921
DSALL, J. T. *See also* FOSTER, J. F.
DWARDES, V. P. Indirect v. direct sulphite cooking, 2075
DWARDS, D. A., and BONILLA, C. F. Viscosity of liquid styrene and butadiene, 1274
DWARDS, D. L. Changes in γ Cassiopeiae during the past 100 years, 1664
DWARDS, J. E., POOL, M. L., and BLAKE, F. C. Adaptation of the Cauchois spectrograph to artificial radioactive sources, 1849, 1850
DWARDS, J. E. *See also* POOL, M. L.
ECKHOUT, J. Spectral analysis of solid substances, 2886
EGAN, E. P., JR. Vapour pressure of liquid nitric acid, 2981
EGGERS, H. R. Regulation of temperature with an accuracy equal to the sensitivity of response of a regulator of the pulsation type, 2990
EGGLETON, P., and KERMACK, W. O. A problem in the random distribution of particles, 73
EGLY, R. S. *See* COMINGS, E. W.
EHRENHAFT, F. The magnetic current, 281; New evidence for the magnetic current, 1913; The measurement of single magnetic charges and the electrostatic field around the permanent magnet, 1917
EHRET, W. F., and FRERE, F. J. Ternary systems involving water and aluminium fluoride with aluminium nitrate, sulphate, or chloride, 1562; Dimorphism in aluminium fluoride trihydrate, 1582
EHRKE, L. F. *See* SLACK, C. M.
VAN DEN EIJK, J. *See* ZWIKKER, C.
EILENBERG, S., and STEENROD, N. E. Axiomatic approach to homology theory, 2090
EINSTEIN, H. A. The movement of bed particles in a turbulent stream, 1296
EISENBERG, P. *See* CHINN, H. A.
EKLUND, S. A simple neutron generator using the D-D process, 297; Some measurements of ultimate vacuum and pump speed of molecular pumps. II, 525
EKLUND, S., and HOLE, N. On neutron-induced activities in aluminium, 288
EKMAN, V. W., and DEACON, G. E. R. Internal waves in the sea, 2794
EKSERGIAN, R. On the reaction of fluids and fluid jets, 866; On the efficiency of power units, 971
EKSTEIN, H. Free vibrations of anisotropic bodies, 530; High frequency vibrations of thin crystal plates, 2836
ELAZARI-VOLCANI, B. *See* BLOCH, R.
VON ELBE, G., and MENTSER, M. Further studies of the structure and stability of burner flames, 1803
ELDER, F. K., TIEDEMAN, J. A., KINSLER, L. E., RIGGIN, J. D., PINKSTON, E. R., and GOODWIN, R. A. Physics in the navy, 834
ELEY, D. D. *See* POWELL, R. E.
ELIAS, M. K. Loess and its economic importance, 2634
ELIEZER, C. J., and MAILVAGANAM, A. W. On the classical theory of radiating electrons, 3007
ELINSON, M. I. *See* ZERNOV, D. V.
ELKIN, P. B., SHULL, C. G., and ROESS, L. C. Silica-alumina gels, 3108
ELLIOTT, D. R., and LIPPMANN, S. A. The thermodynamics of rubber at small extensions, 1815
ELLIOTT, L. G. *See* DEUTSCH, M.
ELLIS, G. H., and THOMPSON, J. F. Determination of cobalt in biological materials with nitrosocresol, 2548
ELÖD, E., and ZAHN, H. Isolation and properties of the fusiform cells of wool, 1112
EMMETT, P. H., and GREY, J. B. The hydrogenation of ethylene, propylene, and 2-butene on iron catalysts, 1068
EMMETT, R. A. Acrylonitrile-butadiene copolymers, 665
VON ENGELHARDT, W. On the theory of thixotropy, 365
EPPLER, W. F. Relative mechanical corrosion hardness of synthetic corundum, 2013
EPSTEIN, D. W. *See* MALOFF, I. G.
EPSTEIN, P. S. The reality problem in quantum mechanics, 2741
ERBRING, H., and BROESE, S. Vibration-viscosimetric measurements on concentrated suspensions, 1283
ERDÉLYI, A., and KERMACK, W. O. Note on the equation $f(z)K'_n(z) - g(z)K_n(z) = 0$, 1622
ERIKSON, H. A. Electric field produced by revolving charges, 230
ERIKSSON, H. A. A. Some applications and properties of the hyperspherical harmonics with three polar angles, 1618
ERIKSSON, H. A. S. Spinor representations of rotations and Dirac's equations in five-dimensional space, 92; Vector-pseudovector meson theory, 285; A technique for the approximate calculation of eigen-values as zeros of a determinant. Applications to the Li^+—ion in the ground state, 1679
ERNST, C. E. *See* BRADLEY, C. B.
ERNST, R. C., and SCHUMACHER, E. F. Infra-red radiant-heat baking of enamels, 1482
ERWIN, W. S. Supersonic measurement of metal thickness, 2155
ESCLANGON, E. On the astronomical refraction, 484; On geodetic refraction, 485
ESVAL, O. E. The Gyrosyn compass, 1265
ETKIN, B. Turning in a wind, 2197

EVANS, D. P. The influence of alkyl groups upon reaction velocities in solution. V. The formation of phenyltrialkyl-ammonium iodides in methyl alcohol, 675

EVANS, L. K., and GILLAM, A. E. The effect of molecular environment on the absorption spectra of organic compounds in solution. IV. Dienones and dienals, 2930

EVANS, M. G. *See* BELTON, J. W.

EVANS, R. C., and WISELOGLE, F. Y. Studies in the pyridazine series. The absorption spectrum of pyridazine, 1411

EVANS, R. D. *See* BROWN, S. C.; DEUTSCH, M.

EVANS, R. M., and KLUTE, J. Brightness constancy in photographic reproductions, 770

EVANS, U. R. Statistical methods in deciding the efficacy of a modification in technical procedure: the use of the *t*-test to chemists and engineers, 2108

EVANS, W. V. *See* PEARSON, R.

EVERETT, F. L., and MIKLOWITZ, J. Poisson's ratio at high temperatures, 307

EWENS, R. V. G. Effect of substituents on the oxidation potential of ferrous *ortho*-phenanthroline complexes, 2484

EWING, G. W. *See* HUBER, W.

EYRES, N. R. *See* JACKSON, R.

EYRING, H. *See* POWELL, R. E.

FAIRBANK, H. A. The electrical resistivity of copper-zinc and copper-tin alloys at low temperature, 978

FAIRBANKS, H. V. *See* KRÖLL, A. E.

FAN, H. Y. Theory of photoelectric emission from metals, 2859

FAN, K. An asymptotic property of the solutions of certain linear finite-difference equations, 443

FANKUCHEN, I. Some techniques for the growth and preparation of micro-specimens for X-ray diffraction studies, 2585; *see also* JELLINEK, M. H.

FANKUCHEN, I., and JELLINEK, M. H. Low angle X-ray scattering, 1852

FARRANT, J. L. *See* EDDY, C. E.

FAUST, G. T. *See* HILL, W. L.

FAVRE, H. Transverse vibrations of vertically hanging heavy strings, 1326

FEENY, H., and RASETTI, F. Resonance absorption of neutrons in manganese, gallium, and palladium, 1967

FELD, B. T., and LAMB., W. E., JR. Effect of nuclear electric quadrupole moment on the energy levels of a diatomic molecule in a magnetic field. I. Heteronuclear molecules, 1922, 1934

FELDMAN, C. The spectrographic detection of selenium in the d.c. arc flame, 1766

FELSING, W. A. *See* TEMPLETON, D. H.; *See* WHITLOW, E. P.

FENN, W. O., BALE, W. F., and MULLINS, L. J. The radioactivity of potassium from human sources, 287

FÉRAUD, L. Experiment and deduction based on probability considerations, 97

FERGUSON, J. N., JR. The photoconductivity of sodium chloride in the far ultra-violet, 976

FERGUSON, L. N., and BRANCH, G. E. K. Absorption spectra of some linear conjugated systems, 906

FERGUSON, R. H., and NORDSIECK, H. Crystallization of binary and commercial soap systems, 523

FERGUSON, W. J. *See* RANDS, R. D., JR.; SCOTT, R. B.

FERNSTROM, G. A. *See* COOPER, C. M.

FERREL, R. E. *See* REITZ, H. C.

FERRY, J., GEE, G., and TRELOAR, L. R. G. The interaction between rubber and liquids. VII. The heats and entropies of dilution of natural rubber by various liquids, 1816

FETZ, H. Cathodic sputtering with oblique impact of the ions, 255

FILER, L. J., JR., SIDHU, S. S., DAUBERT, B. F., and LONGENECKER, H. E. X-ray investigation of glycerides. I. Diffraction analysis of isomeric monoglycerides, 1132

FINLAY, G. R. *See* BAUER, S. H.

FIRTH, J. B. The spontaneous combustion of hay, 2453

FISCHER, H. The part played by inhibitors at the electrolytic separation of metals. II, 357

FISHER, C. H., MAST, W. C., REHBERG, C. E., and SMITH, L. T. Lactoprene, new synthetic rubber, 2079

FISHER, C. H. *See also* MAST, W. C.

FISHER, E. Torsional vibration of multi-disc systems, 527

FISHER, G. S. Determination of gamma-tocopherol in vegetable oils, 2225

FISHER, L. H., and WEISSLER, G. L. The apparent breakdown of Meek's streamer criterion in divergent gaps due to the failure of Townsend's ionization function, 607

FISHER, R. C. Heating and cooling times in circulating systems, 936

FISK, D. B. *See* SIAS, F. R.

FLEMING, J. A. Committee on co-ordination of cosmic-ray investigations, 1873; Summary of the year's work, to June 30, 1944, Department of Terrestrial Magnetism, Carnegie Institution of Washington, 2600, 2604

FLEMING, J. A., and SCOTT, W. E. List of geomagnetic observatories and thesaurus of values. VI, VII, 717, 2603

FLEMING, W. D. Synthetic mounting medium of high refractive index, 201

FLINT, H. T. *See* CHIRGWIN, B. H.

FLORY, P. J. Thermodynamics of heterogeneous polymers and their solutions, 1501

FLORY, P. J., and REHNER, J., JR. Effect of deformation on the swelling capacity of rubber, 1031

FOHLEN, G. M. *See* KUMLER, W. D.

FOLDY, L. L. The multiple scattering of waves. I. General theory of isotropic scattering by randomly distributed scatterers, 1349

FONDA, G. R. The magnesium tungstate phosphor, 915

FOOR, S. W. *See* SMITH, A. W.

FORBES, G. S., and ANDERSON, H. H. The silicon methoxyisocyanates. Molar refractions in carbon, silicon and germanium compounds containing isocyanate, 899

FORMAN, D. B. Effect of elastomer crystallization on tests for freeze resistance, 669

FORNI, P. A. Effect of stepwise bleaching on the properties of pulps, 1159

FORSS, J. *See* BEEMAN, W. W.

FORSYTH, J. *See* VANDENBELT, J. M.

FORSYTHE, W. E., and ADAMS, E. Q. Colour-temperature scale, 1355; Radiating characteristics of tungsten and tungsten lamps, 1749

FORTEY, J. A projection type of strain-viewer, 2950

FOSTER, A. G. Low-pressure isothermals and heats of sorption, 2995

FOSTER, J. F., and EDSALL, J. T. Studies on double refraction of flow. II. The molecular dimensions of zein, 2952

FOSTER, J. F., and FRENCH, D. The partial specific volume of zein and gliadin, 2763

FOSTER, J. F. *See also* LUYTEN, W. J.; RUNDLE, R. E.

FOWLER, F. H., JR. On fatigue failure under triaxial static and fluctuating stresses and a statistical explanation of size effect, 2421

FOWLER, R. G., and WOLFE, R. A. A non-mechanical interrupter for controlled spark circuits, 1378; *see also* WOLFE, R. A.

FOX, A. H. X-ray crystallography of kojic acid, 2583

FOX, F. A. The properties of some magnesium-aluminium-zinc casting alloys and the incidence of microporosity, 3076

FOX, F. A., and LARDNER, E. An exploration of the problem of superheating in magnesium-base alloys, 2418

FOX, F. E. Demonstration of the Doppler effect, 154

FOX, R. H. Torus homotopy groups, 1610

FOX, W. Equilibrium relationships between fluid interfaces: the system methylene iodide–water–air, 2804

FRAMJI, K. K. *See* PANCHANG, G. M.

FRANCIS, A. W. Solvent selectivity for hydrocarbons measured by critical solution temperature, 518; Critical solution temperatures with cyclic hydrocarbons, 1480

FRANCK, R. E. Controlling quality of resistance-thermometer bulbs, 950

FRANKENBURG, W. G. The adsorption of hydrogen on tungsten. I–II, 1120

FRANKENTHAL, L. Interaction between sodium triphosphate and salts of polyvalent cations as shown by *p*H measurements, 1569

FRANKLIN, G. L. Preparation of thin sections of synthetic resins and wood-resin composites, and a new macerating method for wood, 1787

RANZEN, P., WOUDENBERG, J. P. M., and GORTER, C. J. Absorption of light in a solution of samarium nitrate, 1421
RANZOSO, R. Film printing of viscose rayon with acid dyes, 2078
RASER, J. J. An electronic potentiometer pyrometer, 1808
RAZER, J. C. W. *See* BURFORD, W. B., III
RENCH, C. M., and TREW, V. C. G. The diamagnetic susceptibility of some alkyl and aryl halides, 3059
RENCH, D. *See* FOSTER, J. F.
RENKEL, J. I., and KONTOROVA, T. A. A statistical theory of the brittle strength of real crystals, 2433
RERE, F. J. *See* EHRET, W. F.
REUND, J., and THOMSON, K. J. A simple, rapid technique of preparing water-in-oil emulsions of penicillin, drugs and biologics, 2496
REVEL, L. K. Chemical analysis by powder diffraction, 394; *see also* STURKEY, L.
RIED, K. H., and MAIS, W. H. A modified Atwood machine for use by elementary students, 103
RIEDMAN, H. *See* BIRKS, L. S.
RIEDMAN, I. J. *See* REDLICH, O.
RIEDMAN, J. S. Monopack processes, 773
RIEDRICH, L. W. *See* WEBER, A. H.
RIEDRICHS, K. O., and STOKER, J. J. Forced vibrations of systems with non-linear restoring force, 149
RIEND, J. N., and HARGREAVES, W. D. Viscosities and rheochors of aldehydes, nitriles and of secondary and tertiary amines, 511
RISTOM, R. M. *See* VAN RYSSELBERGHE, P.
RITH, E. M. The effect of solvent type on the viscosity of very dilute solutions of long-chain polymers, 861
ROCHT, M. M. Studies in three-dimensional photoelasticity. Torsional stresses by oblique incidence, 1248
RÖHLICH, H. Phase transitions of solid paraffins and the flexibility of hydrocarbon chains, 227; Theory of the dielectric properties of dipolar solids, 232, 237, 241; Theory of dielectric constant and energy loss in solids and liquids, 600
ROMM, F. The absorption spectra of pyrrole blue A and B, 570
ROMM, G. E. Melamine resins for the development of wet and dry strengths of paper, 1556
ROMMER, L., and MURRAY, A. The influence of the heat treatment of steel on the damping capacity at low stresses, 1554
RONING, H. R. *See* JONES, J. H.
ROST, W. E. *See* LINNETT, J. W.
RUTON, J. S., BALL, E. G., BERGMANN, M., KALCKAR, H. M., MEYERHOF, O., and SMYTHE, C. V. Energy relationships in enzyme reactions, 2450
RY, G. A. A photo-receptor mechanism for the modulation theory of colour vision, 1781
RYBURG, G. C. *See* SIMONS, J. H.
RYE, J. C. *See* SWINEFORD, A.
ULLER, M. L. *See* BRUBAKER, D. G.
UOSS, R. M. Silver chloride windows for infra-red cells, 2911
UOSS, R. M., and MEAD, D. J. Computer for infrared spectra, 2889
URRY, W. H., and HURWITZ, H. Distribution of numbers and distribution of significant figures, 1641
URRY, W. H. *See* GOUDSMIT, S. A.
ÜRTH, R. The microdiffusiometer and its application to the study of the molecular constitution of liquids, 2189
ÜRTH, R., and PRINGLE, R. W. A new photo-electric method for Fourier synthesis and analysis, 438
URUKAWA, H., and KING, G. B. The system magnesium-selenate–selenic-acid–water at 30° C., 332

ABOR, D. Stationary electron swarms in electromagnetic fields, 2314
ABY, P. P. A new type of seismic cross-section wherein accuracy of representation is rendered insensitive to velocity error, 3135
AGE, H. P. Thickness control of colour of sharp cut-off type of glasses, 1408; Thickness control of sharp cut-off type of glasses, 2255
AILLARD, J. Refined quality control speeds up production, 449
GAILUS, W. J., and TELFAIR, D. Creep properties of moulded phenolic plastics at elevated temperatures, 2423
GALE, J. A., STEWART, R. W., and ALFERS, J. B. Flame resistance to thermosetting plastics, 1171
GALLAY, W., and PUDDINGTON, I. E. Wetting power in calcium-soap–oil systems, 872; The state of dispersion of calcium stearate in mineral oils, 1105; The recrystallization of calcium soaps in mineral oils, 1106
GALOTCHKINA, L. P. *See* KRAVKOV, S. V.
GALT, R. I. *See* NOLAN, P. J.
GAMERTSFELDER, G. R. High-energy gamma-ray from radio-yttrium (100d), 1002
GANDOLFO, J. S. Critical height in surface drains, 124
GANENKO, V. E. *See* KORSUNSKY, M. I.
GANGULY, S. C. On the fluorescence spectra of naphthacene in solid solution of anthracene for different exciting wavelengths, 2250; On the study of absorption and fluorescence spectra of some aromatic hydrocarbons in solution, 2910
GANS, D. M. The rarity of zero contact angles, 2803
GAPOSCHKIN, C. P., and GAPOSCHKIN, S. Eclipses of stars with thick atmospheres, 2709
GAPOSCHKIN, S. Photographic light curve of Nova Aquilae, 1943, 466; Notes on seven eclipsing stars, 478; The cluster-type variable W Tucanae, 808; The variable star S Doradus as an eclipsing binary, 809; A new bright eclipsing variable with small range, HV 11 085, 810; The eclipsing system SX Cassiopeiae, 2123; The eclipsing system RX Cassiopeiae, 2124; The Wolf-Rayet eclipsing variable HV 11 086 = HD 214 419, 2125; *see also* GAPOSCHKIN, C. P.
GARD, W. H. *See* NORELLI, P.
GARDINER, K. *See* MCBAIN, J. W.
GÅRDING, L. Relativistic wave equations for zero rest-mass, 1630
GARDNER, K. A. Variable heat-transfer rate correction in multi-pass exchangers, shell-side film controlling, 1796
GARDNER, T. S., SAMUEL, R. The effect of temperature on molecular parachors, 2508
GARDNER, W. Physics and agriculture: physics of the soil, 1969
GARRETT, A. *See* VANDENBELT, J. M.
GARRETT, A. B., and VELLENGA, S. J. The electrical conductivity of thallous chloride solutions of ethylene glycol-water, 2300
GARTON, C. G. *See* SAVIĆ, P.
GARTSHORE, J. L. *See* COTTRALL, L. G.
GASKELL, R. E. On moment-balancing in structural dynamics, 150
GAUNTLETT, M. D. *See* DAVEY, E. P.
GAUZIT, J. *See* HERMAN, R.
GAYDON, A. G. Absorption spectra of mercury halides, 2243
GAYDON, A. G., and PENNEY, W. G. The dissociation energies of CO, N_2, NO and CN, 2240
GEBALLE, R. The production of photons relative to ionization by collision in a Townsend gap, 1350
GEDDES, A. L. *See* SHEPPARD, S. E.
GEE, G. The interaction between rubber and liquids. V. The osmotic pressures of polymer solutions in mixed solvents, 137; VI. Swelling and solubility in mixed liquids, 138; *See also* FERRY, J.
GEHMAN, S. D. Stiffening effect of pigments in rubber, 659; *see also* STAMBAUGH, R. B.
GEIL, G. W. *See* MCADAM, D. J., JR.
GEISER, S. W. Racer's storm (1837), with notes on other Texas hurricanes in the period 1818–1886, 725
GELBART, A. *See* BERS, L.
GELDMACHER, G. *See* SAUER, E.
GELLER, R. F., and YAVORSKY, P. J. Melting point of alpha-alumina, 1799; Effects of some oxide additions on the thermal length changes of zirconia, 2976
GEMANT, A. Dependence on stress of damping capacity of alloys, 2420; Potentiometric determinations of H-ion concentration in hydrocarbon oils, 2542
GEORGE, E. P., and APPAPILLAI, V. Absorption of cosmic rays at Colombo and London, 3054
GEORGE, W. H. *See* CANNON, C. G.
GERHARD, S. L. Kinematic errors in bobbin drives on roving frames, 1684
GEROULD, C. H. Study of tooth structures with the electron microscope, 1857a

GERSHUN, A. Visual photometry in the region of low brightnesses, 161; Fresnel reflection of diffusely incident light, 1773
GEYER, E. W. The new specific heats and energy charts for gases, 3006
GEYLIKMAN, B. T. Energy levels of strongly bound electrons in metal, 2370
GHEORGHIU, V. G., and CALINICENCO, N. The physical properties of water of the Black Sea, 3015
GHOSE, S. *See* SINGH, B. N.
GHOSH, G. On the divergence of the solution of a problem of plane strain, 849
GHOSH, N. N. A note on the Hermitian matrix, 1183
GHOSH, R. N. Acoustical impedance of fog, 2846
GHOSH, S. K., and DAS GUPTA, N. N. Energy spectrum of mesotrons at low energies, 3050
GIBBON, E. R. Stress/strain curves of paper, 2004
GIBLING, T. W. Molecular volume and structure. VII and VIII, 370
GIBSON, K. S. *See* KEEGAN, J.
GICLAS, H. L. *See* EDMONDSON, F. K.
GIESECKE, A. A. *See* JONES, M. W.
GILBERT, G. A. The combination of fibrous proteins with acids. II. The adsorption of dye anions, 1114
GILDON, M. A. *See* GORDON, P. L.
GILL, G. C. *See* HEWSON, E. W.
GILL, P. S. The azimuthal variations of cosmic radiation at 22° latitude, 1888
GILLAM, A. E., and WEST, T. F. Observations on the absorption spectra of terpenoid compounds. V. Umbellulone, 1412
GILLAM, A. E. *See* EVANS, L. K.
GILLAM, W. S. Polarographic determination of vitamin C in fruits and vegetables, 2541
GILLULE, W. J *See* PRICE, E. H.
GILMONT, R. *See* OTHMER, D. F.; PROSEN, E. J.
GILTAY, J. A counter arrangement with constant resolving time, 1537
GINSBURG, N., and MATSEN, F. A. The near ultra-violet absorption spectrum of aniline vapour, 2244
GINSBURG, N. *See also* MATSEN, F. A.
GINSBURG, V. On the theory of the particle of spin 3/2, 2142; On the theory of excited spin states of elementary particles, 2145
GINSBURG, V., and SMORODINSKY, J. On the wave equations for particles with variable spin, 2744
GINZEL, A. On the use of the natural pigments of fur hairs in the improvement of furs, 928; Use of covering colours for the improvement of animal skins, 2072
GISH, O. H. Discussion of "Atmospheric-electric observations at Huancayo, Peru, during the solar eclipse, January 25, 1944," 483
GLADWIN, A. S. A note on a certain multiple integral, 780
GLANCY, A. E. A photographic lens system, 2230
GLASSTONE, S., BARR, V. V., and HESTON, B. O. The electrolytic oxidation of thiosulphate in ethylene glycol solution, 684
GLEISSBERG, W. Note on the epoch of the next sunspot maximum, 803; A secular change in the shape of the spot-frequency curve, 804; Note on the latitude variation of the sunspot belts, 805; A table of secular variations of the solar cycle, 1226; A forecast of solar activity, 2698
GLICK, C. F. *See* AMDUR, I.
GLOCKLER, G., HASKIN, J. F., and PATTERSON, C. C. Depolarization of Raman lines. A further simplification of method, 183
GLÜCKAUF, E. A simple analysis of the helium content of air, 380; Permeability of adsorbing substances, 1546; A photo-electric method of measuring directly the ratio of two illuminations, 1756
GLUCKSMANN, A., TANSLEY, K., and WILSON, C. W. The effect of variations in the dose-rate of gamma radiation on cell degeneration in the frog tadpole, 2377
GLUTMANN, H. R. *See* KLOTZ, I. M.
GODDARD, L. S. The computation of electron trajectories in axially symmetric fields, 263; On the summation of certain trigonometric series, 2676
GODDARD, L. S., and KLEMPERER, O. Electron-ray tracing through magnetic lenses, 264
GODDING, E. W. The testing of night vision, 2262
GODFREY, E. W. C. An application of soil mechanics to a bridge foundation problem, 2148
GODFREY, T. B. *See* COE, J. R.
GOERTZEL, G., and LOWEN, I. S. Magnetic multipole conversion for *K* electrons, 1930
GOFFMAN, C. *See* MANUELE, J.
GOFSTEIN, R. M. *See* BLOUT, E. R.
GOGATE, D. V. Thermomechanical effect in liquid helium II, 1818
GOGATE, D. V., and UPADHYAYA, V. N. Thermal transpiration and reversible process for a degenerate gas, 1500
GOKHALE, S. V. *See* PRASAD, M.
GOLAND, M. *See* DONOVAN, A. F.
GOLD, E., HORZELSKI, J., and WEST, G. D. Causality or indeterminism, 1681
GOLDHABER, M. Radiation widths of highly excited nuclei, 1955; *see also* SCHARFF-GOLDHABER, G.; SCHULZ, LER. G.; YALOW, R. S.
GOLDMAN, J. E. Test for change of pole strength of permanent magnet, 278
GOLDSMITH, A. N. Comments on "On the Quantization of Probability" by H. F. Dunlap, 96
GOLDSTEIN, S., and LIGHTHILL, M. J. Two-dimensional compressible flow past a solid body in unlimited fluid or symmetrically placed in a channel, 121
GOLOBORODKO, T. A. Scattering of neutrons by protons, 2380; Anomalous scattering of photoneutrons by nuclei of heavy elements, 2381
GOLOMB, M. Zeros and poles of functions defined by Taylor series, 441
GOMBAY, L. On extremely dehydrated gelatin foils and their electric conductivity, 1841
GONÇALVES, J. M. Determination of the coefficient of absorption of light in cells, 177; *see also* CHAGAS, C.
GOOD, W. M. *See* BROWN, S. C.
GOODHUE, L. D. *See* SMITH, C. M.
GOODIER, J. N. On combined flexure and torsion, and the flexural buckling of a twisted bar, 1246; *see also* DONOVAN, A. F.
GOODWILL, F. C. *See* BEEMAN, L. A.
GOODWIN, R. A. *See* ELDER, F. K.
GOODWIN, T. W. *See* CHALMERS, T. A.
GORDON, C. G. *See* EDSALL, J. T.
GORDON, P. L., and GILDON, M. A. Determination of the dry hiding of pigmented coatings, 192
GORDON, R. R., and POWELL, H. Variable-path-length cell for the measurement of the absorption of liquids in the infra-red region of the spectrum, 900; Quantitative liquid phase hydrocarbon analysis by infra-red absorption, 2928
GORMLEY, P. G., and HEITLER, W. On the connection of Dirac's quantum-electro-dynamics and the theory of radiation damping, 489
GORODETZKY, S. On the determination of the mass of the charged particles of cosmic radiation, 1881
GORTER, C. J. *See* BROER, L. J. G.; FRANZEN, P.; HOOGSCHAGEN, J.
GOSS, A. E. Control of silica dust hazard in quartz crystal cutting and grinding, 2597
GÖTHLIN, G. F. The fundamental colour sensations in man's colour sense, 2962
GOUDET, G., and GRATZMULLER, A. M. Divergence through space charge of a cylindrical non-accelerated beam of electrons, 2323
GOUDSMIT, S. A., and FURRY, W. H. Significant figures of numbers in statistical tables, 1640
GOUREVICH, M. M. The geometrical solutions of some colour mixture problems, 1439
GOYAN, F. M. *See* STRAIT, A. L.
GRAEF, C. *See* BARAJAS, A.
GRAFF, J. H. Additional weight factors of pulps, 1014
GRAFF, M. M., and SKAU, E. L. Physical-chemical investigations of goldenrod rubber. IV. Increase in viscosity and formation of photogels by irradiation of goldenrod rubber in the absence of oxygen, 1701
GRAHAM, R. L. *See* THODE, H. G.
GRANOVSKY, V. L. Disintregration of the plasma of a low-pressure electrical discharge, 2303
GRANT, R. L., and TIFFANY, J. E. Determining the initiating efficiency of detonators, 2455
GRANVILLE, W. C. Colour control of surface coatings with master and working standards of colour, 1776
GRATZMULLER, A. M. *See* GOUDET, G.

RAY, C. H., MARTON, L., and TATIUN, E. L. Observations of bulges on acetobacter, 2046
RAY, J. B. *See* EMMETT, P. H.
RAY, L. H., and READ, J. The effect of ionizing radiations on the broad bean root. VI, 262
RAY, R. C. The optical anisotropy of cellulose film, 920
RAYBEAL, T. D. The nature of vibration in electric machinery, 1330
REEN, A. E. Double Fourier series and boundary value problems, 1615
REEN, G. Solutions of problems relating to media in contact by the method of wave trains, 151
REEN, H. D. *See* DENISON, A. B.
REENE, H. E., and LOUGHBOROUGH, D. L. Some physical properties of elastomers at low temperature, 1992
REENFIELD, E. W. Universal circuit slide-rule, 71
REENFIELD, M., and HUDSON, G. The velocity of propagation of brittle cracks in steel, 3141
REENIDGE, R. M. C. The mounting and fabrication of plated quartz crystal units, 1149
REENLEE, K. W. *See* HENNE, A. L.
REENSPAN, M. Effect of a small hole on the stresses in a uniformly loaded plate, 2002
REGOR, H. P. *See* SOLLNER, K.
REGORY, C. On a supplement to the field equations with an application to cosmology, 1676
REGORY, J. N. *See* BOWDEN, F. P.
REINACHER, H. The diffusion hygrometer, 2820
REW, K. E. Effect of pressure on thermal diffusion in gases, 2816
RIFFIN, C. W. The sorption of hydrogen by poisoned copper. Temperature variation experiment, 2505
RIFFIN, D. R. How bats guide their flight by supersonic echoes, 1745
RIFFIN, J. B. *See* MOSHER, R. H.
RINER, A. M., TYTELL, A. A., and KERSTEN, H. A luminometer for measuring bacterial luminescence, 1757
RISWOLD, E., ASH, A., and MCREYNOLDS, L. The solvent effect of lithium nitrate on zinc acetate in acetic acid, 2191
RODZINSKI, P. Silvered mirrors for interferometric measurement, 1463
ROETZINGER, G. KRUGER, P. G., and SMITH, L. Evidence for the production of a non-ionizing radiation other than neutrons and gamma-rays by 10 eMV deuterons, 1848; Evidence for the artificial production of a new neutral radiation, 1966
ROETZINGER, G., and SMITH, L. Absorption of 2·8 eMV gamma-rays in lead, 1956
ROSS, B. On the experiment of the dissectible condenser, 1826; On the latitude of cosmic rays, 2348; On the theory of the ionization chamber, 2372
ROSS, B., and DENARD, L. F. On permanent charges in solid dielectrics. I. Dielectric absorption and temperature effects in carnauba wax, 1831
ROSS, I. W., and LIPPERT, G. D. Lightning investigations on 132 kV system of American Gas and Electric Company, 1590
ROSSE, A. V. *See* WACKHER, R. C.
ROSSMAN, F. M., and MOLLOY, C. T. Acoustic sound filtration and hearing-aids, 549
ROVE, D. J. *See* HIPPLE, J. A.
RÜNBERG, G. A. On the distribution of electricity on thin unclosed conducting layers, 2293
RUNBERG, L., and NISSAN, A. H. Energy of viscosity as a measure of the cohesion of liquids, 117; Viscosity of ordinary liquids at high rates of shear, 2774; Degree of association of water from the energy of viscosity and the work of cohesion, 2775
UBERMAN, E. *See* JAHIEL, R.
UELKE, R. A geophysical prospecting instrument using alternating currents of audio-frequency, 2619
UÉNARD, P. Distribution of the potential in a cylindrical electron beam, 2324
UETTEL, C. L. Emission spectrographic equipment used in quantitative analysis, 1376
UGGENHEIM, E. A. Statistical thermodynamics of mixtures with zero energies of mixing, 967; Statistical thermodynamics of mixtures with non-zero energies of mixing, 968; The number of arrangements on a lattice of molecules each occupying several sites, 1502; Statistical thermodynamics of the surface of a regular solution, 2181; The principle of corresponding states, 3003
GUH, J. S. *See* JAW, J. J.
GUHA, B. C. Magnetic properties of some paramagnetic crystals at low temperatures, 2354
GUILD, S. R. Anatomical changes responsible for blast deafness and the prevention of such damage to the ear, 543
GUINAND, A. P. Functional equations and self-reciprocal functions connected with Lambert series, 51
GULBRANSEN, E. A. A vacuum microbalance for the study of chemical reactions on metals, 111; *see also* PHELPS, R. T.
GULLBERG, K. *See* BORELIUS, G.
GUND, F. On special methods of dyeing with indanthrene colours, 1107
GUNNING, H. E., and STEACIE, E. W. R. The mercury-photosensitized polymerization and hydrogenation of butadiene, 2491
GUNTHER, F. A. Dichlorodiphenyltrichloroethane. I. Solubility in various solvents, 2190
DAS GUPTA, N. N. *See* GHOSH, S. K.
DAS GUPTA, P. N. *See* SINGH, B.
GUPTA, SEN. *See* SEN GUPTA
GUREVICH, B. *See* DAVYDOV, B.
GURNEY, C. Effect of length on tensile strength, 1553
GUSS, L. S., and KOLTHOFF, I. M. The behaviour of sulphur dioxide as an acid in methanol, 1084
GUSTAFSON, T. On theoretical determination of fluid motions at small viscosities, 1289
GUTFREUND, H. Molecular weight of Palmer's β-lactoglobulin, 2506
GUTH, E. Theory of filler reinforcement, 2008; *see* DART, S. L.; MROWCA, B. A.
GUTHRIE, G. B., JR., SPITZER, R. W., and HUFFMAN, H. M. Thermal data. XVIII. The heat capacity, heat of fusion, entropy, and free energy of ethylbenzene, 1485
GUTMANN, M. *See* BULL, H. B.
GUTTMAN, L., and PITZER, K. S. Trans-2-butene. The heat capacity, heats of fusion and vaporization, and vapour pressure. The entropy and barrier to internal rotation, 2281

TER HAAR, D. On the origin of smoke particles in the interstellar gas, 2113
DE HAAS, W. J. *See* UBBINK, J. B.
HADEN, W. L., JR., and RICE, O. K. The chain photolysis of acetaldehyde in intermittent light, 2492
HAEFELI, R. *See* CONRAD, H.
HÄGG, G., and MAGNÉLI, A. X-ray studies on molybdenum and tungsten oxides, 3127
HAHN, C., PRIOUL, E., LIEBER, E., CALDWELL, B. P., and SMITH, G. B. L. Reduction of nitroguanidine. XII. Oxidation potentials of the nitro-nitrosoguanidine and the nitrosoaminoguanidine systems, 685
HAHN, P. F. Radioactive iron procedures. Purification, electroplating, and analysis, 1959
HALDANE, J. B. S. A labour-saving method of sampling, 1644; Chance effects and the Gaussian distribution, 2687; Cosmic rays and kinematical relativity, 3051
HALDANE, J. B. S., MILNE, E. A. A quantum theory of the origin of the solar system, 1655
HALE, J. D. Treatment of trees with chemicals to facilitate removal of bark, 1155
HALES, W. B. Recording Lissajous figures, 1342
HALL, C. E., JAKUS, M. A., and SCHMITT, F. O. Structure of certain muscle fibrils as revealed by the use of electron stains, 2059, 3138
HALL, C. E. *See also* SCHMITT, F. O.
HALL, C. P. *See* BALLARD, R. G.
HALL, D. B. The mesotron momentum spectrum at 4·35 km. altitude, 1877
HALL, G. O. *See* ROMANOFF, A. L.
HALL, J. L. *See* HEADLEE, A. J. W.
HALL, M. N. A., MARTIN, S. L. H., and REES, A. L. G. The solubility of hydrogen in zirconium and zirconium-oxygen solid solutions, 1728
HALLE, R., and TURNER, W. E. S. Studies in the distribution of temperature through molten glasses in a tank melting furnace. I. Laboratory measurements on some commercial glasses, 2970
HALLER, Cottonization of bast fibres, 2077
HALLER, R. Chloramine and native spinning fibres, 1012
HAMBRAEUS, G., and RÅNBY, B. Electron microscopic investigation of percipitates of cellulose nitrates, 2497

HAMER, W. J., and ACREE, S. F. A comparison of platinum and palladium hydrogen-electrodes in aqueous solutions of acid potassium phthalate, 356
HAMMER, S. Estimating ore masses in gravity prospecting, 2617
HAMMER, S., NETTLETON, L. L., and HASTINGS, W. K. Gravimeter prospecting for chromite in Cuba, 2616
HAMMERSCHMIDT, E. G. *See* CAPPELL, R. G.
HAMMETT, L. P. *See* SMITH, L. C.
HANDELMAN, G. H. A variational principle for a state of combined plastic stress, 1971
HANEY, R. E. D., and BLISS, H. Compressibilities of nitrogen-carbon dioxide mixtures, 1314
HANNA, C. R., and LYNN, L. B. Gyroscopic stabilizer for tank guns, 851
HANNA, D. L. An inorganic "bouncing putty," 2173
HANSEN, A., JR. *See* WITHEROW, H. M.
HANSEN, J. M. VINTER. *See* VINTER HANSEN
HANSON, G. H., KUIST, B. B., and BROWN, G. G. Liquid densities of volatile hydrocarbon mixtures, 1284
HANSON, W. W. The baffle effect of the human body on the response of a hearing-aid, 546
HANZE, A. R. *See* WOLFROM, M. L.
HARDESTY, J. O., YEE, J. Y., and LOVE, K. S. Moisture relations of mixed fertilizers. Influence of nitrogenous materials, 2819
HARDESTY, J. O. *See also* DAVIS, R. O. E.
HARDING, H. G. W. Illuminants for colorimetry and the colours of total radiators, 1751
HARDING, J. W., and SNEDDON, I. N. The elastic stresses produced by the indentation of the plane surface of a semi-infinite elastic solid by a rigid punch, 1621
HARDUNG, V. Radio-biological investigations with soft X-rays, 3036
HARDY, A. C. Illuminating and viewing conditions for spectrophotometry and colorimetry, 2219
HARDY, G. H. Note on the multiplication of series by Cauchy's rule, 1616
HARDY, H. C. *See* ASTON, J. G.
HARDY, L. H., RAND, G., and RITTLER, M. C. Tests for the detection and analysis of colour-blindness. I. The Ishihara test: An evaluation. II. The Ishihara test: Comparison of editions. III. The Rabkin test, 2965, 2966
HARGRAVE, W. J. *See* BURRIS, A.
HARGREAVES, A. The crystal grain orientation in a rolled magnesium alloy, 2594
HARGREAVES, E. *See* RICHARDS, A. R.
HARGREAVES, W. D. *See* FRIEND, J. N.
HARISH-CHANDRA. On the removal of the infinite self-energies of point-particles, 841; *see also* BHABHA, H. J.
HARKINS, W. D., and JURA, G. Surface of solids. X. Extension of the attractive energy of a solid into an adjacent liquid or film, the decrease of energy with distance, and the thickness of films, 368; XII. An absolute method for the determination of the area of a finely divided crystalline solid. XIII. A vapour adsorption method for the determination of the area of a solid without the assumption of a molecular area, and the areas occupied by nitrogen and other molecules on the surface of a solid, 1118; Equations of state and phase changes in films on liquids and solids, 1304
HARKINS, W. D. *See also* JURA, G.
HARLOW, W. M. The microstructure of high-density plywood, 1170
HARRADON, H. D. Some early contributions to the history of geomagnetism. VII, VIII, 638, 2361
VAN HARREVELD, A., PLESSET, M. S., and WIERSMA, C. A. G. The relation between the physical properties of electric currents and their electronarcotic action, 253
HARRIS, C. M. Application of the wave-theory of room acoustics to the measurement of acoustic impedance, 2849
HARRIS, J. D. Group audiometry, 2851
HARRIS, M. *See* SOOKNE, A. M.
HARRIS, W. E. *See* KOLTHOFF, I. M.
HARRISON, J. J. Effect of esterification of pulp fibres upon strength properties, hygroscopicity, and hygroexpansivity of paper, 300; *see also* ROWLAND, B. W.
HARRISON, M. H. The generalized Cowling model, 2135
HARRISON, S. R., and COLE, O. D. Time/temperature relations in oven ageing of GR-S, 661
HART, E. D. The mass spectrometer. A new electronic aid to analysis, 2236
HART, S. D. *See* OSBORNE, M. F. M.
HARTLEY, H. A. Aesthetics of sound reproduction, 157
HARTMAN, R. J., HOOGSTEEN, H. M., and MOEDE, J. A. The kinetics of the hydrion-catalysed esterification of some substituted benzoic acids with *cyclo*hexanol, 1058
HARTMARK, B. *See* STADLER, J.
HARTREE, D. R. *See* JACKSON, R.
HARTRIDGE, H. The change from trichromatic to dichromatic vision in the human retina, 1780; Colour vision of the fovea centralis, 1782
HARTUNG, E. J. *See* AUSTIN, A. T.
HARVEY, E. N., BARNES, D. K., MCELROY, W. D., WHITELEY, A. H., and PEASE, D. C. Removal of gas nuclei from liquids and surfaces, 1580
HARVEY, J. Synthetic rubber and plastics. Plasticizing of vinyl polymers, 752
HASE, V. T. On the effect of line absorption on the temperature determination of the inner corona, 1662
HASKIN, J. F. *See* GLOCKLER, G.
HASLER, M. F., and DIETERT, H. W. Direct reading instrument for spectrochemical analysis, 1384
HASSAN, M. A. *See* IBRAHIM, M. A.
HASSE, G. Development in printing with pigments, 1103
HASTINGS, W. K. *See* HAMMER, S.
HATCH, R. S. Significance and measurement of pulp viscosity, 1707
HATHWAY, D. E. *See* HODGSON, H. H.
HAUL, R. State of energy and order of atoms in surfaces of liquid and solid substances, 130
HAVAS, P. On the interaction of radiation and two electrons, 159
HAVENHILL, R. S., O'BRIEN, H. C., and RANKIN, J. J. Electrostatic properties of rubber and GR-S, 1825
HAWARD, R. N. The behaviour of laminated and toughened glass under static bending and impact at different velocities, 1010
HAWORTH, F. E. *See* DAVISSON, C. J.
HAY, R. G., MONTGOMERY, C. W., and COULL, J. Catalytic isomerization of l-hexene, 3098
HAYNN, R. Dyeing mixtures of fibres containing wool and cellulose fibres at low temperatures, 1166
HAZEN, W. E. Cascade showers in lead, 626, 627; The relativistic increase in ionization of cosmic-ray electrons, 1890; The relativistic increase in ionization of high-energy electrons and mesotrons, 1891
HEAD, J. W. *See* MORRIS, J.
HEADLEE, A. J. W., and HALL, J. L. Heating value of natural gas, 952
HECHT, S., and HSIA, Y. Dark adaptation following light adaptation to red and white lights, 1454, 2964
HECHT, S., SHLAER, S., and PIRENNE, M. H. Energy, quanta, and vision, 196
VAN HEEL, A. C. S. *See* BOUWERS, A.
HEGRE, E. S., and BLOUNT, R. F. A chin-operated focus adjustment for the dissecting microscope, 2268
HEIDENREICH, R. D., and STURKEY, L. Crystal interference phenomena in electron images, 2029
HEIDLEBERGER, M. *See* MACPHERSON, C. F. C.
HEIDT, L. J. Photolysis of the *d*-glycosides: α-benzylfructofuranoside, β-benzylfructopyranoside, and α- and β-phenyl, benzyl, and β-phenylethylglucosides; and the bearing of the data on the transfer of energy within molecules, 1097
HEIDT, L. J., and PURVES, C. B. Thermal rates and activation energies for the aqueous acid hydrolysis of α- and β-methyl-, phenyl-, and benzyl-D-glucopyranosides α- and β-methyl- and β-benzyl-D-fructopyranosides, and α-methyl-D-fructofuranoside 1055
HEISLER, M. P. *See* PASCHKIS, V.
HEITLER, W. Remarks on the self-energy problem, 1819; *see also* GORMLEY, P. G.
HELDMAN, J. D. The catalytic isomerization of paraffin hydrocarbons. II. Promoters for catalysis by aluminium bromide. III. The course of the reaction 1124
HELLER, W., and KLEVENS, H. B. Molecular weights of proteins as determined by light-scattering, 1432
HELLERMAN, L. *See* PORTER, C. C.

Belz, A. W. Spectrographic determination of sodium, potassium, and lithium in Portland cement with the direct-current carbon arc, 1381

Bemelrijk, J. *See* Clay, J.

Benderson, J. Quartz crystal in New Zealand, 2044

Benne, A. L., and Greenlee, K. W. Preparation and physical constants of acetylenic compounds, 2140

Bennig, G. R., and Kimball, G. E. The kinetics of the electroreduction of acetone, 1095

Berington, E. F. G. The refractive indices of some binary hydrocarbon mixtures, 170

Berington, E. F. G., and Rideal, E. K. On the poisoning of metallic catalysts, 353

Berly, L. Studies in relative differentiation of tissues by means of filtered ultra-violet light, 926

Berman, L. *See* Herman, R.

Berman, R., Herman, L., and Gauzit, J. Infra-red spectrum of the night sky, 2905

Berman, R. C. *See* Shaffer, W. H.

Berrey, E. M. J., and Herrey, H. Principles of physics applied to traffic movements and road conditions, 1261

Berrey, H. *See* Herrey, E. M. J.

Berring, C. Character tables for two space groups, 2569

Bershberger, W. D. Wave-guides and the special theory of relativity, 2143

Bertel, K. L. Air resistance bridge for measuring fibre properties, 1697

Berzog, R. Correlations of critical constants with parachors, 1479

Bess, K. Fine structure and properties of natural and artificial fibres. I, 1985

Beston, B. O. *See* Glasstone, S.

Betrick, R. R. *See* Senior, K. L.

Bewlett, P. S. Graphical representation of growth gradients, 730

Bewson, E. W., and Gill, G. C. Meteorological investigations in Columbia River Valley near Trail, B. C., 1144

Bey, D. H. The new organic chemistry, 3118

Beymann, E., and Bloom, H. Activation energy of ionic migration in molten salts, 2807

Beymann, E., and Yoffe, A. The equilibrium spreading coefficient of amphipathic organic liquids on water, 2805

Bibdon, C. T., Pool, M. L., and Kurbatov, J. D. Radioactive scandium. I, 1944

Bickam, W. M. *See* Hipple, J. A.

Bickling, A. The anodic behaviour of metals. I. Platinum, 2483

Bicks, J. F. G., Hooley, J. G., and Stephenson, C. C. The heat capacity of carbon tetrachloride from 15° to 300° K. The heats of transition and of fusion. The entropy from thermal measurements compared with the entropy from molecular data, 592

Biggins, T. J. Temperature distribution in toroidal electrical coils of rectangular cross section, 2972

Bilberry, A. H. *See* Hilberry, N.

Bilberry, N., and Hilberry, A. H. Cosmic-ray studies in the Andes of Southern Peru, 2345

Bilberry, N., and Pompeia, P. A. A cathode following amplifier for pulse transmission in high resolving time coincidence circuits, 2341

Bilbert, G. E. *See* Whistler, R. L.

Bildebrand, J. H. The liquid state, 136

Bill, E. L. On accelerated coordinate systems in classical and relativistic mechanics, 2737; Rotations of a rigid body about a fixed point, 2750

Bill, L. M. The system sodium carbonate–sodium borate–water at 35°, 3090

Bill, T. L., Branch, G. E. K., and Papoff, M. A spectrophotometric study of the anhydro base of viridine green, 2223

Bill, W. L., Faust, G. T., and Reynolds, D. S. The binary system of P_2O_5-2CaO . P_2O_5. I–II, 670

Bille, E., and Szegö, G. On the complex zeros of the Bessel functions, 439

Billier, J., and Baker, R. F. Microanalysis by means of electrons, 616

Billier, J., and Kurkjian, A. On the artifacts produced by the use of distilled water as an intermediate medium in the mounting of bacterial specimens for the electron microscope, 2048

Biltner, W. A. The eclipsing variable TX Ursae Majoris, 2710

Bind, J. R., and Speakman, J. B. The optimum conditions for setting strained animal fibres, 1973

Binshelwood, C. N. *See* Davies, D. S.; Dresel, E.; Lodge, R. M.; Wadsworth, K. D.

Bipple, J. A., and Condon, E. U. Detection of metastable ions with the mass spectrometer, 2891

Bipple, J. A., Grove, D. J., and Bickam, W. M. Electronic problems involved in the practical application of the mass spectrometer, 2235

Biscox, N. G. *See* Blow, C. M.

Bisey, W. O., and Brandon, C. E. Cuprammonium viscosity of cellulose using the Hoeppler viscosimeter, 2171

Bitchcock, F. L. An improvement on the G.C.D. method for complex roots, 14

Bixson, A. W. Nature and measure of agitation, 327

Bnizda, V. *See* Calingaert, G.

Bo, C. P. *See* Yu, S. H.

Bobson, L. S., Inglis, R. S., and McCants, R. P. Application of quality control to resistance welding, 2691

Bochandel, H. P. *See* Swift, E., Jr.

Bodge, W. V. D. On multiple curves. I–II, 2664

Bodgson, E. A. Bibliography of seismology, July to Dec., 1943, Jan. to June, 1944, 398, 714

Bodgson, H. H., and Bathway, D. E. The absorption spectra of some mononitronaphthylamines, with observations on their structures, 1422

Bodgson, H. H., and Marsden, E. The mechanism of the diazo-coupling reaction. IV. The decomposition of diazotized aniline at different *p*H values, 2014

Bodkinson, B. The impact tube, 1715

Boekstra, J. *See* Thomas, C. L.

Boff, N. J. Stresses in a reinforced monocoque cylinder under concentrated transverse loads, 1245; A strain energy derivation of the torsional-flexural buckling loads of straight columns of thin-walled open sections, 2006

Boff, R. L., Naughton, J. J., Smoluchowski, R., and Uhlig, H. H. Gases evolved by magnetized iron in sulphuric acid, 282

Boffman, E. R. Abrasion resistance of paper base plastics and associated materials, 1560

Bofton, J. Amino resins, 758

Bogben, M. Apparatus for measuring mean cell-diameters in blood film, 2761

Boge, H. J. Vapour pressure, latent heat of vaporization, and triple-point temperature N_2O, 1471

Boldsworth, R. *See* Archenhold, G. H.

Bole, N. *See* Eklund, S.

Bolland, A. J. *See* Balmforth, W.

Bolloway, C., Jr., and Thurber, S. H. Phase behaviour in systems of hydrocarbon-furfural-water, 1564

Bolmberg, B. On nuclear forces described by a pseudovector-scalar neutral meson field, 1928

Bolmes, E. L. Some properties of organic ion-exchange materials, 2445

Bolton, G. J. Rodometric examination of quartz crystals, 2561

Bolzapfel, L. Organic compounds of silicic acid. III. Saponification and polymerization of silicic acid esters in organic media, 1307

Boneycombe, R. W. K. *See* Boas, W.

Bonigman, E. *See* Molloy, C. T.

Bonnor, W. W. Anti-vibration mountings for aircraft radio equipment, 2838

Booft, C. G't. *See* Clay, J.

Boogschagen, J., Snoek, A. P., and Gorter, C. J. The absorption of light in aqueous solutions of neodymium salts, 1409

Boogsteen, H. M. *See* Hartman, R. J.

van Book, A. Kinetics of sucrose crystallization, 1310

van Book, A., and Russell, H. D. The diffusivities of concentrated sucrose solutions, 2188

van Book, A., and Shields, D. Sucrose-salt solutions, 1309

Booley, J. G. *See* Hicks, J. F. G.; Stephenson, C. C.

Bopkins, H. H. Resolving power of the microscope using polarized light, 2267

Bopkins, H. T. Use of infra-red heat in determining aniline points, 2536

HOPPER, V. D. Magnetic ions, 280
HORECKER, B. L. *See* ANDREWS, H. L.
HORGER, O. J. Mechanical and metallurgical advantages of shot-peening, 2011
HORTON, C. W., and ROGERS, F. T., JR. Convection currents in a porous medium, 2973
HORTON, W. S. *See* WARING, C. E.
HORZELSKI, J. *See* GOLD, E.
HOTEKO, H. E. *See* BHABHA, H. J.
HOTTE, G. H. *See* SIEMINSKI, M. A.
HOTTEL, H. C., and KALITINSKY, A. Temperature measurements in high-velocity air streams, 1806
HOUGHTON, J. L. Combination of spherical lenses to replace nonspherical refracting surfaces in optical systems, 1368
HOUSEHOLDER, A. S. Muscular dynamics and muscular efficiency. I. The isometric length-tension diagram of striated skeletal muscle, 2057; The two-factor theory of nervous excitation with non-normal accommodation, 2058; Dynamics of quadrupedal locomotion, 2639
HOWARD, H. C. *See* WARD, J. J.
HOWARD, J. N. *See* KENWORTHY, A. L.
HOWATSON, A. F. The behaviour of liquids in a vibrating air column, 1746
HOWE, G. W. O. Electromotive force and potential difference, 1528; The pinch effect: an electrostatic phenomenon, 2356
HOWELL, H. G. Resonance in precessional states of diatomic molecules, 902; The spectra of tin and lead hydrides, 903
HOWLAND, J. J., JR., and NOYES, W. A., JR. Photochemical studies. XXXVII. Some tests of mechanism for the photochemical decomposition of acetone, 360
HOYLE, F. On the origin of the solar system, 1657; *see also* BONDI, H.
HSIA, Y. *See* HECHT, S.
HSIUNG, C. C. On the curvature form and the projective curvatures of a space curve, 35; Contribution to the projective differential geometry of a surface, 37
HSU, P. L. The limiting distribution of a general class of statistics, 72
HSÜEH, C. F., and MA, S. T. Approximate solution of the integral equations in scattering problems, 2683
HSUEH, C. W. The Rydberg constants and the value of e/m, 1821
HU, N. Velocity and temperature distribution in turbulent wakes behind an infinite cylinder and a body of revolution, 1319; Velocity and temperature distributions in turbulent wakes behind a row of equally spaced parallel rods and behind a square grid, 1320
HUA, L. K. On character sums, 4; On some problems of the geometrical theory of numbers, 24
HUA, L. K., and MIN, S. H. An analogue of Tarry's problem, 3; On a double exponential sum, 5
HUANG, K. On the excitation of the coronal lines, 2703; The continuous absorption of light by negative sodium atoms, 2927
HUBER, R. W. *See* POTTER, E. V.
HUBER, W., EWING, G. W., and KRIGER, J. The absorption spectra of the vitamins and pro-vitamins D, 2925
HUDSON, G. *See* GREENFIELD, M.
HUFFMAN, G. E. *See* KELLEY, K. K.
HUFFMAN, H. M. *See* GUTHRIE, G. B., JR.; KNOWLTON, J. W.
HUGGINS, M. L. Comparison of the structures of stretched linear polymers, 1984; Photography of crystal structures, 2577; Photography of crystal structures by optical Fourier synthesis, 2596
HUGGINS, M. L., and SUN, K.-H. Energy additivity in glasses, 2473
HUGHES, D. Cloud chamber photographs at high altitudes, 2373
HUGHES, E. C. *See* BURK, R. E.
HUGHES, E. W., SAWYER, W. M., and VINOGRAD, J. R. X-ray diffraction study of micelle structure in potassium laurate solutions, 2392
HULBERT, H. M. Chemical processes in continuous-flow systems. Reaction kinetics, 1567
HULL, G. F., JR. Apparatus for the production and measurement of small motions, 1268
HULTHÉN, L. A note on eigenphases and eigenfunctions of certain continuous spectra, 491; Variational problem for the continuous spectrum of a Schrödinger equation, 492; On the meson field theory of nuclear forces and the scattering of fast neutrons by protons. III, 1001; High-energy neutron-proton scattering and the saturation problem, 1869
HULTQUIST, M. E., POE, C. F., and WITT, N. F. Derivatives of ipral, neonal, nostal and sandoptal: an optical crystallographic study, 3119
HUMASON, M. L., and SANFORD, R. F. Nova Puppis 1942, 470
HUMBERT, P. A new solution of the equation $\Delta_3 U = U$, 2097
HUMBLET, J. On the angular momentum of an electromagnetic wave, 1908
HUME-ROTHERY, W. On Grüneisen's equation for thermal expansion, 1797; *see also* BUTCHERS, E.; LITTLE, A. T.
HUMPHREY, G. L. *See* DONOHUE, J.
HUMPHREY, J. N. *See* BEEMAN, W. W.
HUMPHREYS, C. J., and MEGGERS, W. F. Term analyses of the first two spectra of columbium [niobium], 2895
HUNDT, W. *See* BAIER, H.
HUNT, G. J. *See* VAN RYSSELBERGHE, P.
HUNT, H. *See* MILLER, A. J.
HUNTER, A. The astronomical aspect, 456; The cosmic time-scale, 799
HUNTER, E., and OAKES, W. G. The effect of temperature on the density of polythene, 1470
HUNTER, J. B., and BLISS, H. Thermodynamic properties of aqueous salt solutions, 962
HUNTER, J. S. *See* PHILLIPS, G. M.
HUNTER, M. C. Static and clinging friction of pivot bearings, 1040
HURST, J. E., and RILEY, R. V. A further note on the microstructure of high-silicon acid-resisting iron, 1549
HURWITZ, H. *See* FURRY, W. H.
HURWITZ, H., JR. The statistical properties of unpolarized light, 2856
HURWITZ, S. On a class of functions suggested by the zeta of Riemann, 55
HUSHLEY, W. J. Gamma-rays from beryllium caused by proton bombardment, 1952
HUTCHISON, D. A. Density of potassium chloride, 504
HUTCHINSON, E. On the measurement of the thermal conductivity of liquids, 1794
HUTTEN, E. H., and PRINGSHEIM, P. The fluorescence of diethyl pseudo-isocyanine chloride in solution, 2249
HUTTER, R. G. E. Rigorous calculation of an electrostatic immersion lens, 617; The electron optics of mass spectrographs and velocity focussing devices, 1868
HYNEK, J. A. The helium anomaly in ϕ Persei, 824

IBRAHIM, M. A., and HASSAN, M. A. Pressure drop in branches of air tunnels of square cross-section, 2832
IIDA, T. T. Electrical conductivity of cytolyzed Paramecium, 243
INDRA, M. K. *See* MUKHERJEE, J. N.
INFELD, L. A new approach to relativistic cosmology, 2696
INGELMAN, B., and SIEGBAHN, K. Dextran and levan molecules studied with the electron microscope, 283
INGHAM, J. *See* JACKSON, R.
INGLIS, C. E. Mechanical vibrations: their cause and prevention, 529; Gyroscopic principles and applications, 1263; The determination of critical speeds, natural frequencies and modes of vibration by means of basic functions, 2200
INGLIS, R. S. *See* HOBSON, L. S.
INGOLD, C. K. *See* RIDEAL, E. K.
INGRAM, W. H. On the integral equations of continuous dynamical systems, 1206
INGRAM, W. H., and CRAMLET, C. M. On the foundations of electrical network theory, 1611
IPATIEFF, V. N. *See* PINES, H.
IREDALE, T., and LYONS, L. E. The influence of inert gases on the photodecomposition of gaseous acetone, 1098
IREDALE, T. *See also* REDIES, M. F.
IRISH, P. R. The application of spectrochemical analysis in the steel mill, 1390
IRVINE, J. W., JR. *See* CLARKE, E. T.

MIN, H. S., and KOBE, K. A. The solubility of some salts in ethylenediamine, monoethanolamine and ethylene glycol, 2192

IAQ, M. The λ3 338 band of OD, 567

NG, G. On the magnetic properties of varved clay, 1137

EROW, S. *See* ASTON, J. G.

N ITTERBEEK, A., MARIËNS, P., and VERPOORTEN, I. Activated adsorption of hydrogen in the neighbourhood of the Curie point, 3110

N ITTERBEEK, A., and VANDONINCK, W. On the velocity of propagation of sound in air, and in a nitrogen-hydrogen mixture, at low temperatures. Calculation of the specific heats, 539

ANOV, A. V. *See* KORSUNSKY, M. I.

'ANENKO, D. Further remarks on the difficulties of the meson theory, 644

'ANENKO, D., and SOKOLOW, A. On the theory of bi-particles, 2745

ER, P. V. K. The distribution of the mean of samples from a rectangular population, 2102; A note on Hotelling's T^2, 2103

ABER, M. A. On S-groups, 78

CKSON, D. L. C. *See* BOULTON, J.

BLOŃSKI, A. Long duration of the Balmer spectrum in excited hydrogen, 2237

CKSON, R., SARJANT, R. J. WAGSTAFF, J. B., EYRES, N. R., HARTREE, D. R., and INGHAM, J. Heat flow, 1792

COBS, D. H. The Stiles-Crawford effect and the design of telescopes, 935

EGER, C. The stability of regulating reservoirs and of systems of these, 1285

EGER, J. C. Conduction of heat in a slab in contact with well-stirred fluid, 1795

EGER, J. C., and SOMERVILLE, J. L. Study of the dissipation of the frictional heat in the mechanical process, 937

FFÉ, G. On the equation of state of monolayers, 516; *see also* AMIS, E. S.

FFE, H. Calculation of the piezo-electric effect in ionic lattices of the zinc-blende type, 1832

FFEE, R. I. The effect of order-disorder on the thermo-electric properties of Ni_3Mn, 979

GITSCH, R. A remark on the article by K. E. Zimens: Determination of surface and measurement of diffusion by radioactive rare gases, 293

HIEL, R., GUBERMAN, E., and KAZDAN, R. Action of radioactive substances on the speed of growth of penicillium notatum and the production of a potent penicillin, 1005

KUS, M. A. *See* HALL, C. E.; SCHMITT, F. O.

MES, T. H. The mechanism of normal fog formation in hydroquinone developers, 766

NOSSY, L. Some aspects of the production of mesons and the barometer effect of penetrating showers, 991

NOSSY, L., and ROCHESTER, G. D. The transition effect of penetrating showers, 988; The barometer effect of penetrating showers, 990

NOSSY, L., ROCHESTER, G. D., and BROADBENT, D. Extensive penetrating showers, 1883

NSEN, E. F. *See* SHAW, T. M.

UCH, J. M. Neutron-proton scattering and the meson theory of nuclear forces, 1931

W, J. J., and GUH, J. S. The deterioration of hot and cold air masses through the action of exchange, 407

YCOX, E. K. The spectrochemical analysis of copper-base alloys, 1767; 2556

YME, G. Reactivity of cellulose pulps, 2010

BANGUENIN, P. Photoelectric measurements on liquids using the spark counter, 2858

EFFERSON, H. Gyroscopic coupling terms, 2835

EFFERSON, M. E. *See* O'CONNOR, R. T.

EFFREY, G. A. The structure of polyisoprenes. I. The crystal structure of geranylamine hydrochloride. II. The structure of β-guttapercha, 2595

EHLE, H. Conversion of non-rationalized c.g.s. to rationalized m.k.s. units in electromagnetism, 1892

ELLINEK, M. H., and FANKUCHEN, I. X-ray diffraction examination of γ-alumina, 2590

ELLINEK, M. H. *See also* FANKUCHEN, I.

EN, G. K., CHOW, K. T., LO, Y. T., and KUAN, C. C. An observation on the ionosphere during the solar eclipse of July 20, 1944, 832

JENCKS, P. J. *See* MACLEAN, M. E.

JENKINS, H. O. The temperature dependence of ionic dissociations, 2471

JENKS, G. *See* DOLE, M.

JENNETT, W. J. *See* DUDDING, B. P.

JENNY, F. J. *See* SCHEIBEL, E. G.

JENSEN, A. S. Doppler effect—a lecture demonstration, 1333; Lens aberrations—a classroom demonstration, 2229

JENSEN, L. H., and LINGAFELTER, E. C. X-ray crystallographic studies of organic sulphonates. I. The quarter-hydrates of certain sodium l-alkane-sulphonates, 1133

JESSE, W. P. The latitude effect for the hard component of cosmic rays and evidence as to the nature of the primary radiation, 2347

JESSUP, R. S. *See* PROSEN, E. J.

JHA, S. N. *See* DUBE, G. P.

JOFFE, A. F. *See* JOFFE, A. V.

JOFFE, A. V., and JOFFE, A. F. Semi-conductors in strong electric fields, 246

JOHNSON, C. R. *See* KENNARD, M.

JOHNSON, H. R. *See* BRICKER, C. E.

JOHNSON, J. B. Enhanced thermionic emission, 1866

JOHNSON, M. The physicist's mind and the judgment of art, 2733

JOHNSON, N. K. The structure of a waterspout, 2038

JOHNSON, W. H., PROSEN, E. J., and ROSSINI, F. D. Heats of combustion and isomerization of the eight C_9H_{12} alkylbenzenes, 2997

JOHNSON, W. W. A. *See* NORMAN, D. P.

JOHNSTON, F. B. *See* YULE, J. A. C.

JOHNSTON, H. F. American magnetic character-figure, C_A, three-hour-range indices, K, and mean K-indices, K_A, for April to June, 1944, 720, 2611, 2612; Five international quiet and disturbed days for January to September, 1944, 721, 2611, 2613; Mean K-indices from twenty-seven magnetic observatories and preliminary international character-figures for 1943, 2610

JONES, A. T. A theory of singing flames, 1329; Singing flames, 2204

JONES, C. W. *See* MILLER, J. C. P.

JONES, E. R. H. *See* BARTON, D. H. R.; BRAUDE, E. A.

JONES, F. E. The quaternary system CaO-Al_2O_3-$CaSO_4$-H_2O at 25° C. Equilibria with crystalline $Al_2O_3 \cdot 3H_2O$, alumina gel, and solid solution, 1050; The quinary system CaO-Al_2O_3-$CaSO_4$-K_2O-H_2O (1 per cent KOH) at 25° C., 1051; The quinary system CaO-Al_2O_3-$CaSO_4$-Na_2O-H_2O (1 per cent NaOH) at 25° C., 1052

JONES, G., and CHRISTIAN, S. M. The viscosity of aqueous solutions of electrolytes as a function of the concentration. VIII. Potassium ferricyanide, 118

JONES, G., and COLVIN, J. H. Electrochemical studies on vanadium salts. I. The vanadyl-vanadic oxidation-reduction potential. III. The vanadic-vanadous oxidation-reduction potential, 1094

JONES, G., and RAY, W. A. Electrochemical studies on vanadium salts. II. The hydrolysis of vanadyl sulphate and vanadic sulphate solutions, 1094

JONES, G., and WOOD, L. A. The measurement of potentials at the interface between vitreous silica and solutions of potassium chloride by the streaming potential method, 1298

JONES, G. M., and BRAUNS, F. E. Ethers of certain lignin derivatives, 755

JONES, G. O. The determination of the elastic and viscous properties of glass at temperatures below the annealing range, 2403

JONES, H. Plastics and their future in the textile industry, 760

JONES, H. SPENCER, and CULLEN, R. T. The division errors of the reversible transit circle of the Royal Observatory, Greenwich, 1653

JONES, J. H. Electrical conductance of aqueous solutions. I. Sodium and potassium bromates at 25°, and the conductance of the bromate ion, 680

JONES, J. H., and FRONING, H. R. Isotonic solutions; activity coefficients of sodium bromate and potassium chlorate, 879

JONES, M. W., and GIESECKE, A. A. Atmospheric-electric observations at Huancayo, Peru, during the solar eclipse, January 25, 1944, 482

JONES, R. C. On the theory of the directional patterns of continuous source distributions on a plane surface, 1332
JONES, R. C., and NEUWORTH, M. B. The ultra-violet absorption spectra of hydrocarbon trinitrobenzene complexes, 909
JONES, R. E., and TOWNEND, D. T. A. Mechanism of the oxidation of coal, 2454
JONES, W. M. Table of direction-cosines to four figures at intervals of one degree in latitude and longitude over a zone of 60° of longitude and latitude from 0° to 40°, 1633; The use of differences of arrival-times of *P* as an aid to epicentral determination in the South Pacific, 2031
DE JONG, J. *See* NAWIJN, A.
JONNARD, R. Determination of total nitrogen in proteins and their hydrolyzates. Improved method and apparatus, 2529
JOSE, P. D. *See* LUYTEN, W. J.
JOSEPH, H. J. The fixing of confidence limits to measurements, 2686
JOSEPH, J. J. *See* KING, C. V.
JOSHI, S. S. The light-effect under electrical discharge: the probable time-lag in its production, 983; Production of the eigat- (light-) effect under X-rays, 1847; The preferential incidence of the light-effect in the high-frequency region of the discharge current, 2304; Saturation in the light-effect under electric discharge, 2307
JOSHI, S. S., and DESHMUKH, G. S. Interaction of nitrous oxide and hydrogen in the silent discharge, 2305
JOUGUET, M. On the Foucault currents in an ellipsoid of revolution, 633; On the heating, by Foucault currents, of a sphere and an ellipsoid of revolution, elongated or flattened, 2359; Electromagnetic vibrations in ellipsoidal cavities, 3063
JOYNER, L. G. *See* OSTER, G.
JOYNER, M. C. *See* SEARES, F. H.
JUDD, D. B. The relation of protanopic to normal vision, 1449; Standard response functions for protanopic and deuteranopic vision, 1452
JULIA, G. On weak convergence, 436
JUPNIK, H. Preliminary experiments in phase-difference microscopy, 1458
JURA, G., and HARKINS, W. D. Surface of solids XI. Determination of the decrease (π) of free surface energy of a solid by an adsorbed film, 1118; The effect of the sub-phase upon the properties of physically adsorbed films, 2502
JURA, G. *See also* HARKINS, W. D.
JUSTI, E. A persistent-current electromagnet, 3017
JUUL, A. Investigations on the microphone effect of the cochlea with some remarks on a new technique, 541

KAHN, F. *See* PHELPS, H. S.
KAISER, H. F. *See* CARAPELLA, L. A.
KALCKAR, H. M. *See* FRUTON, J. S.
KALIKHMAN, L. Resistance of, and heat transfer from, a flat plate in a high-velocity gas stream, 2828
KALITINSKY, A. *See* HOTTEL, H. C.
KAMEN, M. D., and BARKER, H. A. Inadequacies in present knowledge of the relation between photosynthesis and the O^{18} content of atmospheric oxygen, 2488
KANE, G. Magnetic saturation of microscopic particles, 1914; Theoretical implications of the magnetic current, 1918
KANE, G., and REYNOLDS, C. B. The motion of small particles in magnetic fields, 1912
KANN, S. *See* SOBOTKA, H.
KANNING, E. W., BYRNE, J. B., and BOBALEK, E. G. The conductivity of sulphuric acid in methanol at 20°, 30°, and 35°, 1089
KANTROWITZ, M. S. Developments in the graphic arts for the year 1943, 747
KAPITZA, P. L. Super-fluidity of helium II and attainment of the absolute zero, 587
KAPREKAR, D. R. A peculiar gap-filling process for powers of $(9)_n$, 2083; *see also* CHANDRATRAYA, M. L.
KAR, K. C. The distortion of plane χ-wave and its effect on elastic scattering in Coulomb field, 2322
KAR, K. C., and BASU, C. The scattering of fast β-particles by electrons, 1862
KAR, K. C., and MITRA, S. N. Proton-proton scattering at low velocity, 3045
KAR, K. C., and ROY, R. R. A self-consistent method for determining the mass of the mesotron, 645; The theory of neutron-proton scattering, 646
KARLE, I. L., and BROCKWAY, L. O. The structures of biphenyl, *o*-terphenyl and tetraphenylene, 999
KARLE, J. The calculation of the contribution of freely rotating groups to electron scattering by gases, 2321
VON KÁRMÁN, T. Faster than sound, 2829
KARPINSKI, Z. *See* LAHIRI, A.
KASANOF, D. R. *See* NIEDERL, J. B.
KASHA, M. *See* LEWIS, G. N.
KASNER, E., and DE CICCO, J. Scale curves in conformal maps, 431; Scale curves in general cartography, 432; An extension of Lie's theorem on isothermal families, 1619; Irregular projective invariants, 2089
KASSEL, L. S. *See* PINES, H.
KAUFFMAN, F. L., and URBAIN, W. M. The photochemical inactivation of trypsin and papain solutions in the ultra-violet region, 1099
KAUFMAN, D. *See* PERLMANN, G. E.
KAVANAGH, G. M. *See* STOCKMAYER, W. H.
KAVANAU, J. L. A relation between bond multiplicity and interatomic distance, 1924
KAYE, W. I. *See* CLARK, G. L.
KAZDAN, R. *See* JAHIEL, R.
KEEGAN, H. J. On the measurement of the spectral apparent reflectance of low-reflecting materials, 1429
KEEGAN, H. J., and GIBSON, K. S. On the use of working standards of didymium and vitrolite glasses for spectrophotometric measurements, 1456
KEHREN, Rubberizing rayon fabric webs. II, 1019; On the paper 'On limiting concentrations of rubber poisons in rubberizing processes" by P. Kluckow, 2071
KELKAR, V. N. Effect of the rate of trickle on the mass of the drop, 2182; A note on constant-pressure air thermometer, 2278
KELLAWAY, P. Cochlear microphonics. A critical review, 156
KELLER, E. G. Some present nonlinear problems of the electrical and aeronautical industries, 1625
KELLEY, K. K. Specific heats at low temperatures of titanium and titanium carbide, 958; *see also* SHOMATE, C. H.
KELLEY, K. K., BOFRICKE, F. S., MOORE, G. E., HUFFMAN, E. H., and BANGERT, W. M. Thermodynamic properties of the carbides of chromium, 590
KELLEY, O. J., and SHAW, B. T. Studies of clay particles with the electron microscope. III. Hydrodynamic considerations in relation to shape of particles, 299
KELLNER, L. The C-C valency vibrations of organic molecules, 1575
KELLY, K. L. *See* NICKERSON, D.
KELVENS, H. B. *See* HELLER, W.
KEMP, A. R., and STRAITIFF, W. G. Structural features of Buna S. Relation to physical properties, 701
KEMP, A. R. *See also* MCMAHON, W.
KENDALL, J. T. The rectifying property of carborundum, 1836
KENNARD, M., and JOHNSON, C. R. Spectrophotometric determination of iron with sulphosalicylic acid, 1356
KENNEDY, R. M. *See* ASTON, J. G.
KENNON, W. L. The logic of the calendar, 1675
KENRICK, F. B. *See* LANGILLE, R. C.
KENT, P. E. Contemporaneous disturbances in lacustrine beds in Kenya, 2621
KENWORTHY, A. L., and HOWARD, J. N. Purification of water by use of synthetic ion-exchange resins: using *p*H as a control, 2477
KEPPLER, D. *See* RATH, H.
KERMACK, W. O. *See* EGGLETON; ERDÉLYI, A.
KERR, R. B. *See* SHOOK, E. M.
KERR, R. W., and SCHINK, N. F. Use of pyrodextrins in the clay coating of paper, 2648
KERSTEN, H. *See* GRINER, A. M.
KERTH, M. Printing of formaldehyde-treated "zellwolle," 1167
KETCHUM, P. W. On the discontinuous flow around an airfoil with flap, 147
KETTERING, C. F. The effect of the molecular structure of fuels on the power and efficiency of internal combustion engines, 2518
KETTERING, C. F., and SCOTT, G. G. Inertia of the carrier of electricity in copper and aluminium, 973
KHAN, N. *See* LAL, S.

HARADSE, E. K. A brief report on the activity of the Abastumani Astrophysical Observatory on Mt. Kanobili in the year 1940–42, 1651; Colour indices of 4535 stars in 11 Kapteyn areas, 1670
HASTGIR, S. R. On whistling meteors, 801
IANG, A. T. Vibrational-rotational spectrum and potential function of a linear asymmetric triatomic molecule, 1404
IBBLE, W. F. An extension of a theorem of Mehler's on Hermite polynomials, 1609
IKUCHI, C. *See* PODOLSKY, B.
ILPATRICK, J. E. *See* WAGMAN, D. D.
IMBALL, G. E. *See* DE BÉTHUNE, A. J.; HENNIG, G. R.
IMBALL, W. S. Temperature distribution within boiler tubing under oblique radiation, 941
INCAID, W. M., and MORKOVIN, V. An application of orthogonal moments to problems in statically indeterminate structures, 1687
ING, A. J. The reduction of noise from air-conditioning systems, 2211
ING, A. L. The spore discharge mechanism of common ferns, 870
ING, A. S., and SWINGS, P. Comparative study of the red and violet systems of cyanogen bands, 2904
ING, C. V., and JOSEPHS, J. J. The effect of dielectric constant and temperature on the catalysed decomposition of azodicarbonate ion, 348
ING, C. V., and MARION, A. P. The ionization constants of very weak acids. Acetoxime, methyl ethyl and diethyl ketoximes, 354
ING, G. Permeability of keratin membranes, 301; Sorption vapours by keratin and wool, 1727; Permeability of keratin membranes to water vapour, 3077
ING, G. B. *See* FURUKAWA, H.
ING, G. W. Punched-card tables of the exponential function, 1214; *see also* THOMAS, G. B.
ING, J. G. The pattern of fuel research, 744
INGSHILL, K. L., and LEWES, L. G. Investigation of bursts observed in two thin-walled ionization chambers, 1879
INGSLAKE, R. The effective aperture of a photographic objective, 2882
INNAIRD, R. F. *See* BARNES, R. B.
INSLER, L. E. *See* ELDER, F. K.
IRKPATRICK, P. Theory and use of Ross filters. II, 612; Efficiency of production of continuous X-radiation, 621; *see also* SMICK, A. E.
IRKPATRICK, P., and CHANG, C. K. X-ray monochromatization by four balanced filters, 611
IRKPATRICK, P., and WIEDMANN, L. Theoretical continuous X-ray energy and polarization, 3029
IRKWOOD, I. W. A. *See* RITCHIE, P. D.
IRKWOOD, J. G. *See* OSTER, G.
IRNER, W. R. *See* WARD, J. J.
ISTEMAKER, J. *See* KRAMERS, H. A.
ISTIAKOWSKY, G. B., and VAN ARTSDALEN, E. R. Bromination of hydrocarbons. I. Photochemical and thermal bromination of methane and methyl bromine. Carbon-hydrogen bond strength in methane, 2489
JELLBERG, B. A problem of moments, 45
KLEIBER, M. A tympanometer, 2165; *see also* SMITH, F. R.
KLEMPERER, O. *See* GODDARD, L. S.
KLEVENS, H. B. *See* PLATT, J. R.; RUSOFF, I. I.
KLINE, C. H., JR., and TURKEVICH, J. Catalytic synthesis of pyridine, 970
KLINE, H. Phenolic resins for paper-base plastics, 756
KLING, W. *See* DEUSCHLE, G.
KLOTZ, I. M., and GUTMANN, H. R. The mode of action of sulphonamides. Dissociation constants of the enzyme-drug complex, 3093
KLUG, H. P., and ALEXANDER, L. The crystal structure of ammonium pentachlorozincate, 709
KLUTE, C. H., and WALTERS, W. D. The effect of nitric oxide upon the biacetyl promoted thermal decomposition of acetone and acetaldehyde, 3091
KLUTE, J. *See* EVANS, R. M.
KNOWLTON, J. W., and HUFFMAN, H. M. The heats of combustion of some substituted eicosanes, heneicosanes, and docosanes, 963
KO, C. On the decomposition of quadratic forms in seven variables, 9; On the decomposition of quadratic forms in eight variables, 10
KO, C., and WANG, S. C. Table of primitive positive quaternary quadratic forms with determinant $\leqslant 25$, 21
KOBB, K. A. *See* ISBIN, H. S.
KOCH, H. P. *See* BATEMAN, L.
KOCH, H. W. *See* BALDWIN, G. C.
KOCH, W. Increasing the depth of focus in photomicrography by incident light, 199; An adjustable scale for measuring instruments, 2732
KOCH, W., PHILLIPS, H. C., and WINT, R. Nitrocellulose lacquers, 2435
KOCHARIAN, N. *See* ALICHANIAN, A.
KOCHERHANS, R. Measurement of light in light-fastness tests, 896
KOFLER, A., and BRANDSTÄTTER, M. The fusion diagram of picrylchloride: trinitrotoluene, 213; On the isomorphous interchange of the groups —CH=CH— and $—CH_2=CH_2—$ (cinnamic acid and hydrocinnamic acid), 387
KOGBETLIANTZ, E. G. Quantitative interpretation of magnetic and gravitational anomalies, 1136
KÖHLER, W., and WALLACH, H. Figural after-effects, 932
KOLIN, A. An alternating-field induction flow meter of high sensitivity, 1716; Mercury jet magnetometer, 3055
KOLLBRUNNER, C. F., and DUBAS, C. Application of difference equations in calculating ferro-concrete protection pillars, 1212
KOLLMAN, R. C. *See* OTHMER, D. F.
KOLTHOFF, I. M. *See* GUSS, L. S.; ZLOTOWSKI, I.
KOLTHOFF, I. M., HARRIS, W. E., and MATSUYAMA, G. A new method for the polarographic determination of nitrate, 1128
KOMAR, A. The spontaneous magnetization and electrical resistance of the alloy Ni_3Mn, 1843
KOMAREWSKY, V. I., and SHAND, W. C. Catalytic aromatization of branched-chain aliphatic hydrocarbons, 677
KOMAREWSKY, V. I., and SMITH, L. G. The action of chromia catalyst on aliphatic *iso*-alcohols and *iso*-aldehydes, 676
KOMAREWSKY, V. I., UHLICK, S. C., and MURRAY, M. J. Catalytic dehydration of l-hexanol and l-octanol, 3115
KOMAREWSKY, V. I., and WARSON, L. Production of isoparaffins, 3102
KONET, H. Electrically operated gyroscopic instruments, 850
KONTOROVA, T. A. *See* FRENKEL, J. I.
KOPAL, Z. Some tables to facilitate computation of elements of eclipsing binaries, 790; A study of the Wolf-Rayet eclipsing binary HD 193 576 = V 444 Cygni, 814
KORMES, J. P., and KORMES, M. Numerical solution of initial-value problems by means of punched-card machines, 1205
KORMES, M. *See* KORMES, J. P.
KORNETZKI, M. Hysteresis in the Rayleigh range of weak magnetic fields with sheared magnetization curves, 2355
KORNFELD, M. Measurement of the modulus of rigidity of solid and liquid bodies, 2402
KORSUNSKY, M. I., WALTHER, A. K., IVANOV, A. V., ZYPKIN, S. I., and GANENKO, V. E. An investigation of "Bremsstrahlung" by means of excited In^{115} nuclei, 2376
KOSTEN, C. W. *See* ZWIKKER, C.
KOSTEN, L. On the frequency distribution of the number of discharges counted by a Geiger-Müller counter in a constant interval, 1538
KÖSTER, E. Dyeing "zellwolle" with sulphur dyes at low temperatures, 1165
KOTHARI, D. S., and AULUCK, F. C. A note on the minimum radius for degenerate stellar masses, 1223
KOTHARI, D. S. *See also* AULUCK, F. C.; BHATNAGAR, P. L.
KOYENUMA, N. An approximate formula for the effective reaction cross-section σ_{eff} of slow neutrons for a $1/v$-absorber, 2382
KRÄHENBÜHL, E. "Orema" dyes, a new class of dyes for textile printing, 2073
KRAMERS, H. A. On multipole radiation, 1529
KRAMERS, H. A., and KISTEMAKER, J. On the slip of a diffusing gas mixture along a wall, 1731

KRASNOOSHKIN, P. E. Theory of ultrasonic interferometer, 1340
KRAVKOV, S. V., and GALOTCHKINA, L. P. Electrotonus in colour vision, 2963
KREIDL, N. J. Recent studies on the fluorescence of glass, 2247
KREMERS, H. E. *See* MOELLER, T.
KRESS, O. Development of high sulphidity in kraft cooking liquors, 1597
KRETSCHMER, H. H. Colour spectrograms for demonstration purposes, 2233
KREUTZER, F. L. *See* MORALES, M. F.
KREUTZER, W. A. *See* MCLEAN, J. G.
KRIEBLE, V. K., and SMELLIE, R., JR. The storing of hydrocyanic acid, 3114
KRIEGEL, M. W. Analysis for hydrocarbons in the presence of nitrous oxide, 1138
KRIEGER, K. A. Apparatus for surface area measurement, 110
KRIGER, J. *See* HUBER, W.
KRISHNAMURTY, V. G. *See* RAO, K. R.
KRISHNAN, R. S. Thermal expansion of diamond, 211; Raman spectrum of diamond, 1427; Raman spectrum of quartz, 2251; Raman and infra-red spectra of rock-salt, 2944
KRISHNAN, R. S., and RAMACHANDRAN, G. N. Dynamic X-ray reflections in diamond, 2309
KRISHNAN, R. S., and RAO, P. V. Molecular aggregation in optical glasses as revealed by light scattering, 581
KROEGER, W. J. *See* BACON, R. H.
KROGDAHL, M. K. The interaction of a proton and a hydrogen atom in its excited states, 2297; The interaction of a proton and a helium atom in its excited states, 2298
KROLL, A. E., and FAIRBANKS, H. V. Globe-valve flow coefficients for valve meters, 2791
KRON, G. Equivalent circuits of the elastic field, 842; Electric circuit models of the Schrödinger equation, 1239; Tensorial analysis and equivalent circuits of elastic structures, 1253; Numerical solution of ordinary and partial differential equations by means of equivalent circuits, 2095; *see also* CARTER, G. K.; PREBUS, A. F.
KRONBERGER, H., and WEISS, J. Formation and structure of some organic molecular compounds. III. The dielectric polarization of some solid crystalline molecular compounds, 240
KRONIG, R. On time losses in machinery undergoing interruptions, 2063
KRONIG, R., and MONDRIA, H. On time losses in machinery undergoing interruptions. II, 2064
KROPF, A. Evaluation of 30-year records of the rainfall stations of the Central Meteorological Institute, 727
KRÜGER, H. E. *See* BROSER, W.
KRUGER, P. G., and OGLE, W. E. Gamma-rays emitted during the radioactive transitions $Sb^{124} \rightarrow Te^{124}$ and $Na^{24} \rightarrow Mg^{24}$, 1950
KRUGER, P. G. *See also* GROETZINGER, G.; OGLE, W. E.
KRUITHOF, A. M. The radial course of the populations of the energy levels in the column of an electric arc, and some relative transition probabilities in the spectra of Ba I and Ba II, 1391
KRYLOV, N. Relaxation processes in statistical systems, 99
KRZYWOBLOCKI, M. Z. L. Optimum height of flight of winged rocket- or jet-bomb, 2830
KSANDA, C. J. *See* COWIE, D. B.
KUAN, C. C. *See* JEN, G. K.
KÜCHLER, L. The homogeneous thermic decomposition of cyclopentane, 341
KUHN, H., and WHEATLEY, G. A. A simple refractometer of the Jamin type, 2883
KUIPER, G. P. Titan: a satellite with an atmosphere, 2114
KUIST, B. B. *See* HANSON, G. H.
KULKARNI, S. B. Spectroscopic investigation of the effect of magnetic field on electrical discharge in gases, 981
KUMLER, W. D., and FOHLEN, G. M. Dipole moments of some sex hormones, sterols and isophorone, 2365
KUMLER, W. D. *See also* STRAIT, A. L.
KUO, Y. H. On the force and moment acting on a body in shear flow, 123
KURBATOV, J. D. A classification of stable nuclei, 3066 *see also* HIBDON, C. T.; KURBATOV, M. H.; WEIMER, P. K.
KURBATOV, J. D., and KURBATOV, M. H. Progress in the determination of the number of artificially produced radioactive atoms, 1960
KURBATOV, M. H., and KURBATOV, J. D. Target chemistry of zirconium and yttrium: isolation of Zr^{89} in pure state, 2511; *see also* KURBATOV, J. D.
KURKJIAN, A. *See* HILLIER, J.
KUSAKA, S. The energy spectrum of the primary cosmic radiation, 1878
KUTOSH, S. *See* ZETTLEMOYER, A. C.
KVARZ'HAVA, I. *See* ALICHANIAN, A.
KVETINSKAS, B. *See* PINES, H.

LABAW, L. W. Wave-front determination in a supersonic beam, 1339; Curved quartz crystals as supersonic generators, 1741; Wave-front determination in a unidirectional supersonic beam, 2843; *see also* WILLIAMS, A. O., JR.
LABOURET, J. Pneumatic breaking of the electric arc, 2788
LACEY, W. N. *See* REAMER, H. H.
LAEMMLEIN, G. G. Coloured haloes surrounding inclusions of monazite in quartz, 3121
LAGEMANN, R. T. Velocity of sound and molecular association in liquids, 1306; A modification of Kavanau's relation, 1925; A relation between viscosity and refractive index, 2169
LAGERCRANTZ, C. Direct conductivity measurements in electrophoretic boundaries, 3014
LAGERQVIST, A. The green bands of magnesium oxide, 566
LAGERQVIST, A., and WESTÖÖ, R. Perturbed bands of beryllium oxide between $\lambda 8\,000$ Å and $\lambda 10\,000$ Å, 2242
LAHAYE, L. *See* SCHEELE, W.
LAHIRI, A., KARPINSKI, Z., and MARDLES, E. W. J. The problem of engine deposits, 2776
LAL, S., and KHAN, N. The magnetic study of quinhydrone, 1899
LAMARQUE, P., and MERING, J. The sub-microscopic study of human bone by X-ray diffraction, 3081
LAMB, A. B., and MYSELS, K. J. The carbonato and bicarbonato pentammine cobalti ions, 2517
LAMB, E. H. Loads borne on elastic supports, 1252
LAMB, W. E. *See* FELD, B. T.
LAMB, W. E., JR. *See* FELD, B. T.
LAMBERT, W. D. The international gravity formula, 2138
LANCZOS, C. *See* DANIELSON, G. C.
LANDAHL, H. D. Outline of a mathematical theory of the removal of malarial parasites from the blood stream, 733; Neural mechanisms for the concepts of difference and similarity, 2635
LANDAU, L. On the theory of the intermediate state of supra-conductors, 1842; On the hydrodynamics of helium II, 2176
LANDEN, E. W. Reducing electrical interference from spectrographic spark source, 561
LANDER, J. J., and SVIRBELY, W. J. The dipole moments of catechol, resorcinol and hydroquinone, 2364
LANGBERG, E. L. A low-impedance counter circuit, 1272
LANGER, A. L. *See* PHELPS, R. T.
LANGILLE, R. C., BRAID, P. E., and KENRICK, F. B. A comparison of two methods for determining the surface area of a powder, 1269
LANGMUIR, I., and SCHAEFER, V. J. Rates of evaporation of water through compressed monolayers of water, 947
LANGSTON, J. W. *See* MCELVAIN, S. M.
LAPITZKY, M. M., and THOMPSON, S. Miniature and micro suspended-level viscometers, 1282
LARDNER, E. *See* FOX, F. A.
LARRIS, F. *See* BORELIUS, G.
LARSEN, R. G., and PERRY, G. L. Investigation of friction and wear under quasi-hydrodynamic conditions, 1287
LASNITZKI, I. A quantitative analysis of the effect of gamma radiation on malignant cells *in vitro* and *in vivo*, 3070
LASSÉ, R. Separation of fibres by physical methods, 1011
LASSENINS, T. By-products of the cellulose industry, 1157
LATSHAW, E. An elastic theory for rubber, 1027

AUBENGAYER, A. W., and SEARS, D. S. Donor-acceptor bonding. III. Methyl cyanide addition compounds of boron trichloride and boron trifluoride, 2515
AUBENGAYER, A. W. *See also* BAUER, S. H.
AUCHLAN, A. D. E. Borax as a standard buffer solution, 355
AUE LAUE, M. A relativistic proof of Wien's displacement law, 1750
AUER, K. Relative wet strength of cellulose fibres, 749
AUFFER, M. A. The size and shape of tobacco mosaic virus particles, 695; The influence of concentration upon the sedimentation rate of tobacco mosaic virus, 696
AURENSON, R. M., and LONG, T. H. A tachometer-accelerometer-vibrometer for instrument gyroscope testing, 2767
AWLEY, D. N. The factorial analysis of multiple-item tests, 1
AWSON, M., and DUNCAN, A. B. F. The spectrum of deuteroacetone in the vacuum ultra-violet. A comparison with the spectrum of acetone, 180
AWTON, T. S., JR., CARSWELL, T. S., and NASON, H. K. Effect of some environmental conditions on the mechanical properties of cellulose acetate and cellulose nitrate plastic sheets, 2417
AWTON, T. S., JR., and NASON, H. K. Effect of ultra-violet light on cellulose acetate and nitrate, 2487
AX, M. The effect of radiation on the vibrations of a circular diaphragm, 532
EA, D. E., and SMITH, K. M. The inactivation of plant viruses by radiations. II. The relation between inactivation dose and size of virus, 260
EACH, S. J. *See* BANKS, W. H.
EBEL, C. J. Pressure and field response of the ear in hearing-aid performance determination, 547
EDINEGG, E. *See* BORGNIS, F.
EE, A. R., and RIGDEN, P. J. The use of mechanical tests in the design of bituminous road-surfacing mixtures. I. Dense tar surfacings, 2160
EE, H. C. On plane factorization of pseudo-Euclidean rotations, 17; On unitary geometry, 42
EE, J. On the problem of desiccation of the Tarim basin during historic times, 413
EE, J. A. St. Regis successfully bleaches groundwood, 2647
EHMANN, E. On the action of formaldehyde on animal fibres, 1015; Nature of animal fibres. III. Chemical and histological studies of the action of ammonia on human hair, 1545
EHNER, J., and MARK, C. An application of the method of the acceleration potential, 125
EICHTLE, P. A. Spectrographic determination of trace elements in 70/30 brass and admiralty brass. I, 173
EICHTLE, P. A., and WICHROWSKI, A. F. Spectrographic analysis of wrought copper alloys, 2555
EINFELDER, P. J. *See* ROBBIE, W. A.
EIS, D. G., and CURRAN, B. C. Electric moments of some γ-substituted pyridines, 1535
EIVESLEY, V. W. The abridger, 448; A problem-solving scale, 2099
LEROY, D. J., and STEACIE, E. W. R. The reaction of hydrogen atoms with acetylene, 339
LEVENBERG, K. A method for the solution of certain non-linear problems in least squares, 1217
LEVERT, C., and SCHEEN, W. L. Probability fluctuations of discharges in a Geiger–Müller counter produced by cosmic radiation, 1523
LEVI, F. W. On semigroups, 2110
LEVIN, N. M. *See* ZERNOV, D. V.
LEVITON, A. Adsorption of riboflavin by lactose. Influence of temperature, 698
LEVY, S. On plate calibration in spectrographic analysis, 163; Spectral stability in the condensed spark discharge in air, 1382
LEWIS, F. M. Load distribution of reduction gears, 2758; *see also* MAYO, F. R.
LEWIS, G. N. Rules for the absorption spectra of dyes, 2917
LEWIS, G. N., and KASHA, M. Phosphorescence and the triplet state, 1425; Phosphorescence in fluid media and the reverse process of singlet-triplet absorption, 2940
LEWIS, G. N., LIPKIN, D., and MAGEL, T. T. The light absorption and fluorescence of triarylmethyl free radicals, 904
LEWIS, L. G. Study of cosmic-ray air showers with the method of coincident bursts in two unshielded ionization chambers, 1884; *see also* KINGSHILL, K. L.
LEWIS, R. W. *See also* RAVENSCROFT, P. H.
LEWIS, R. W., and BROWN, O. W. Electrolytic reduction of trinitro aromatic compounds to triamines by use of a carrier catalyst, 689; Catalytic vapour-phase oxidation of picolines over vanadate catalysts, 1072
LEWIS, W. B. Working depths for low-frequency electrical prospecting, 2620
LIDDIARD, E. A. G. *See* SMITH, D. M.
LIEBER, E. *See* HAHN, C.
LIEBERT, E. *See* BRECHT, W.
LIEBHAFSKY, H. A., and WINSLOW, E. H. Chemical analysis by X-ray absorption, 2557
LIEBOWITZ, B. A calculus of finite precision, 1238; A theorem on functional determinants, 2673; Development of electromagnetic theory for non-homogeneous spaces—a correction, 2855
LIESEGANG, R. E. Movement of solutions in paper, 874
LIFSHITZ, E. Radiation of sound in helium II, 2986
LIFSHITZ, I. M. Optical behaviour of non-ideal crystal lattices in the infra-red. I–III, 3120
LIGHTHILL, M. J. *See* GOLDSTEIN, S.
LIN, C. C. On the stability of two-dimensional parallel flows, 865; Some recent investigations on hydrodynamic stability, 1290
LIN, S. T. Effect of iron tube on its magnetizing field, 279
LINDH, A. E. *K*-emission lines in argon, 1511
LINDH, A. E., and NILSSON, A. *K*-absorption spectrum of free chlorine and of chlorine in hydrogen chloride, 1513
LINDHOLM, E. On the spectrum of HCl in the photographic infra-red, 569
LINDHOLM, F. Barometric effect on cosmic rays, 1524
LINDSAY, R. B. *See* SMYTH, J. B.
LINEWEAVER, H. *See* SHAW, T. M.
LINFOOT, E. H. Achromatized plate-mirror systems, 1759; Phase-difference microscopy, 1784
LINGAFELTER, E. C. *See* JENSEN, L. H.; RIEGGER, E.
LINGANE, J. J. Polarographic characteristics of vanadium in its various oxidation states, 2540
LINGANE, J. J., and LOVERIDGE, B. A. Fundamental studies with the dropping mercury electrode. III. Influence of capillary characteristics on the diffusion current and residual current, 1091
LINN, C. B. *See* WACKHER, R. C.
LINNETT, J. W. The force constants of some CH, NH and related bonds, 1576
LINNETT, J. W., RAYNOR, E. J., and FROST, W. E. The mechanism of spark ignition, 3094
LIPKIN, D. *See* LEWIS, G. N.
LIPPERT, G. D. *See* GROSS, I. W.
LIPPMANN, S. A. *See* ELLIOTT, D. R.
LIPS, H. A. Standard testing methods for light fastness in the paper industry, 2649
LIPSON, H., NELSON, J. B., and RILEY, D. P. Monochromatic X-radiation, 3030
LIPSON, H., and ROGERS, E. R. The measurement of X-ray wavelengths by the powder method: Cr$K\beta_1$ and Mn$K\beta_1$, 304
LISKA, J. W. *See* CONANT, F. S.
LITMAN, B. Damping effect of d.c. marine propulsion motors on vibrations produced in drive shafts by large propellers, 1341
LITTLE, A. T., HUME-ROTHERY, W., and RAYNOR, G. V. The constitution of aluminium-copper-magnesium alloys at 460°C, 671
LITTLE, R. W. Destructive irradiation technique of spectrophotometric vitamin A assay, 556
LITTLER, T. S. Electrical hearing-aids, 550
LITTLEWOOD, D. E. On invariant theory under restricted groups, 1185
LITTMAN, H. Z. *See* BLOCH, R.
LIVENS, G. H. On the energy and mechanical relations of the magnetic field, 1893
LIVINGSTON, H. K. Contact angles and adsorption on solid surfaces, 514; The relationship between the Brunauer-Emmett-Teller adsorption isotherm and the new isotherm of Jura and Harkins, 1303

LJUNGGREN, W. On some arctan-equations leading to interesting indeterminate equations, 11
LO, Y. T. *See* JEN, G. K.
LODGE, R. M., and HINSHELWOOD, C. N. The adaptation of *Bact. lactis aerogenes* to certain changes of medium, 731
LOMAX, J. The air permeability of mosquito netting, 2389
LONDON, A. L. *See* SEBAN, R. A.
LONG, T. H. *See* LAURENSON, R. M.
LONGENECKER, H. E. *See* FILER, L. J., JR.
LONGUET-HIGGINS, H. C. *See* BELL, R. P.; BURAWOY, A.
LONGWORTH, A. L. Thermostatic control as an aid to efficiency in fuel utilization, 2989
LONSDALE, K. Extra X-ray reflections from diamonds, 2310; Are there four possible diamond structures? 2571
LOO, C. T. Note on strong summability of Fourier series, 47
LOPES, J. L. The influence of the recoil of heavy particles on the nuclear potential energy, 1932
LOPES, J. L., and SCHÖNBERG, M. The radiation field of a point electron, 1823
LORCH, L. On Fejér's calculation of the Lesbesgue constants, 2674
LOTZKAR, H. *See* OWENS, H. S.; PALMER, K. J.
LOUGHBOROUGH, D. L. *See* GREENE, H. E.
LOVE, K. S. *See* HARDESTY, J. O.
LOVELL, E. L. Viscometric chain length of wood cellulose in Triton F solution, 1280
LOVERIDGE, B. A. *See* LINGANE, J. J.
LOWAN, A. N. Note on Green's functions in the theory of heat conduction, 53; On the problem of heat conduction in thin plates, 2270
LOWAN, A. N., and SALZER, H. E. Coefficients for interpolation within a square grid in the complex plane, 425; Table of coefficients for numerical integration without differences, 2091
LOWEN, I. S. *K* to *L* conversion ratio, 1929; *see also* GOERTZEL, G.
LU, C. S., and DONOHUE, J. An electron diffraction investigation of sulphur nitride, arsenic disulphide (realgar), arsenic trisulphide (orpiment) and sulphur, 397
LU, C. S. *See also* WANG, S. N.; *see* WASER, J.
LUBAŃSKI, J. K. Remark on the theory of mixed meson fields, 1933
LUBATTI, O. F. Sorption of fumigants, 2815
LUBKIN, S., and STOKER, J. J. Stability of columns and strings under periodically varying forces, 102
LUCAS, H. J., STEWART, W. T., and PRESSMAN, D. The hydration of unsaturated compounds. XII. The rate of hydration of β, β-dimethylacrolein and its equilibrium with β-hydroxyisovaleraldehyde, 1067
LUCASSE, W. W. *See* CREELY, J. W.
LUCKIESH, M. Visual acuity and visual tasks, 197
LUCKIESH, M., and TAYLOR, A. H. Radiant energy from fluorescent lamps, 1353
LUMMERZHEIM, H. The Agracolour-method for colour photography and kinematography, 3148
LUNDEGÅRDH, H., and STENLID, G. A new method for quantitative extinction measurements in absorption spectra, 2908
LUPTON, J. M., and LYNCH, C. C. Polarographic examination of carbonyl compounds, 379
LUSTMAN, B. Study of the deposition potentials and microstructures of electro-deposited nickel-zinc alloys, 1022
LUYTEN, W. J. Note on the double white dwarf L 462–56 = LDS 275, 816; A proposal for the classification of white-dwarf spectra, 2722
LUYTEN, W. J., JOSE, P. D., and FOSTER, J. F. Colour indices of proper-motion stars, 2705
LYNCH, C. C. *See* LUPTON, J. M.
LYNN, J. G., ZWEMER, R. L., CHICK, A. J., and MILLER, A. E. A new method for the generation and use of focused ultrasound in experimental biology, 2206
LYNN, L. B. *See* HANNA, C. R.
LYON, D. A. Practical applications of metallic and non-metallic films on optical elements, 1774
LYONS, L. E. *See* IREDALE, T.
LYONS, W. J. The influence of velocity gradient on the relation between viscosity and concentration in cuprammonium solutions of cellulose, 1278
LYOT, B. Planetary and solar observations on the Pic du Midi in 1941, 1942, and 1943, 2699
MA, S. T. Calculations of the scattering of mesons by the matrix method, 93; *see also* HSÜEH, C. F.
VAN MAANEN, A. The photographic determination of stellar parallaxes with the 60- and 100-in. reflectors, 806; Investigations on proper motion. XXIII. The proper motion of the cluster *h* Persei, 819
MCADAM, D. J., JR., and MEBS, R. W. An investigation of the technical cohesive strength of metals, 315; The technical cohesive strength and other mechanical properties of metals at low temperatures, 316
MCADAM, D. J., JR., MEBS, R. W., and GEIL, G. W. The technical cohesive strength of some steels and light alloys at low temperatures, 317
MCADAM, D. L. On the geometry of colour space, 923; Design of a printed spectrum, 2258; *see also* SILBERSTEIN, L.
MCARDLE, E. H., and ROBERTSON, A. E. Evaporation indices of hydrocarbon thinners, 1476
M'AULAY, A. L. A transfer method for deriving the effect on the image formed by an optical system from ray changes produced at a given surface, 2875
M'AULAY, A. L., and CRUICKSHANK, F. D. A differential method of adjusting the aberration of a lens system, 2874
MCBAIN, J. W., GARDINER, K., and VOLD, R. D. Soap-boiling equilibria for sodium stearate. The new phase, kettle wax, 1571
MCBAIN, M. E. L. Diffusion of the lower alkyl sulphonic acids and some large molecules, 881
MCCANN, G. D. *See* CRINER, H. E.
MCCANTS, R. P. *See* HOBSON, L. S.
MACCÁRTHAIGH, M. D. *See* O'CEALLAIGH, C.
MCCARTHY, W. W., and TURKEVICH, J. Butene-1 and butene-2 equilibrium, 1123
MCCLEAN, W. N. The water resources of Loch Quoich, 1588
MACCOLL, H. G. The statistical control of accuracy in routine analysis, 451
MCCULLOCH, W. S. A heterachy of values determined by the topology of nervous nets, 2636
MCDANIEL, B. D. *See* CRITTENDEN, E. C., JR.
MCDONALD, H. J., and MCMILLAN, W. R. Carbon tetrachloride-tetrachloroethylene system, 1478
MCDONALD, H. J. *See also* MCMILLAN, W. R.
MCDONALD, R. S. *See* BARNES, R. B.
MACDOUGALL, F. H., and ALLEN, M. The solubility of silver acetate in mixtures of ethyl alcohol and water. The formation of complex ions, 2809
MCDOWELL, C. A., and WALKER, B. Y. Note on an improved falling sphere viscometer for use with opaque liquids, 2780
MCELROY, W. D. *See* HARVEY, E. N.
MCELVAIN, S. M., and LANGSTON, J. W. The polymerization of cyclohexene with hydrogen fluoride, 1125
MACEWAN, D. M. C. Identification of the Montmorillonite group of minerals by X-rays, 305
MACEY, H. H. Experiments on plasticity, I–II, 2424
MCGINNIS, C. S., and PEPPER, R. Intonation of the Boehm clarinet, 1337
MCGUCKIN, G. M. History of the geophysical exploration of the Cameron Meadows Dome, Cameron Parish, Louisiana, 2615
MACHADO, A. L. *See* CHAGAS, C.
MACINTIRE, W. H., PALMER, G., and MARSHALL, H. L. A "reference" precipitated tricalcium phosphate hydrate, 2578
MACINTOSH, R. M. *See* CENTER, E. J.
MACINTYRE, J. R. Totalizing contents of aircraft fuel tanks, 864
MCKEE, R. H. Industrial uses and marketing problems of tall oil, 2644
MCKELLAR, A. Comparison of the λ3 883 CN band in the spectra of comets 1940c and 1942g, 802
MCKELLAR, A., and STILWELL, W. H. The resonance lines of Li I and Na I in spectra of the red carbon stars, 83
MCKENZIE, H. M. *See* EDGE, S. R. H.
MCKERROW, N. W. *See* CARSTEN, H. R. F.
MCLAUGHLIN, D. B., and VAN DIJKE, S. E. A. The spectrographic orbit and light-variations of η Geminorum, 818
MCLEAN, I. W., JR. *See* SHARP, D. G.
MCLEAN, J. G., and KREUTZER, W. A. The determination of virus infections in the potato tuber by the use of ultra-violet light, 2216

MACLEAN, M. E., JENCKS, P. J., and ACREE, S. F. Comparison of the purity of samples of organic solvents by ultra-violet spectrophotometry, 1360

MACLEOD, D. B. Van der Waals' equation of state and the compressibility of molecules, 148; A calculation of the latent heat of vaporization based on a revised equation of state, 1493

MCLEOD, J. H. A graphical correlation of transmittances and thicknesses in optical filters, 1772

MCLEOD, J. H., and SHERWOOD, W. T. A proposed method of specifying appearance defects of optical parts, 1457; A proposed method of specifying appearance defects of optical parts, 1783

MCLOUGHLIN, R. P. A frequency standard for use at high and low frequencies, 2848

MCMAHON, H. O., and MARSHALL, M. J. The molecular complexity of some gases in the high-frequency discharge, 608

MCMAHON, W., and KEMP, A. R. Pigment incorporation in GR-S through latex, 750

MCMILLAN, W. G., JR., and MAYER, J. E. The statistical thermodynamics of multicomponent systems, 3000

MCMILLAN, W. R., and MCDONALD, H. J. Vapour pressure of the ternary system acetic-acid–benzene–carbontetrachloride, 1802

MCMILLAN, W. R. *See also* MCDONALD, H. J.

MCMURDIE, H. F. Microscopic and diffraction studies on dry cells and their raw materials, 3041

MCNALLY, J. R., JR. First spark spectrum of thorium—infra-red spectrum and further classification of Th II, 2899

MACPHERSON, C. F. C., and HEIDLEBERGER, M. Denatured egg albumin. I. The preparation and purification of crystalline egg albumin denatured in various ways. II. Viscosities. III. Quantitative immunochemical studies on crystalline egg albumin denatured in various ways, 2773

MACPHERSON, H. G. The energy balance at the positive crater of the carbon arc, 1510

MCRAE, D. B. A physical photometer for afocal optical systems, 1364; 2869

MCREYNOLDS, L. *See* GRISWOLD, E.

MACROBERT, T. M. Expansions in terms of associated Legendre functions, 781

MCVITTIE, G. C. Models of the universe and cosmological time-scales, 81

MAGAT, M. *See* SCOTT, R. L.; SCHNEIDER, W. C.

MAGEL, T. T. *See* LEWIS, G. N.

MAGINNISS, F. J. Differential analyser applications, 2684

MAGNÉLI, A. *See* HÄGG, G.

MAHAJAN, L. D. Time lag and humid fatigue of hygrometers, 2817

MAILVAGANAM, A. W. *See* ELIEZER, C. J.

MAIR, B. J. Separation and determination of aromatic and mono-olefin hydrocarbons in mixtures with paraffins and naphthenes by adsorption, 2559

MAIS, W. H. *See* FRIED, K. H.

MAKEPEACE, G. R. *See* CRAFT, C. H.

MAKOWER, B. *See* DUNLAP, W. C., JR.

MALAMPHY, M. C., and VALLELY, J. L. Geophysical survey of the Arkansas bauxite region, 400

MALAMPHY, R. H. Melamine laminates, 757

MALKIN, I. On a generalization of Kirchhoff's theory of transversal plate vibrations in the vibration problem of steam turbine discs, 893

MALMFORS, K. G. Experimental determination of asymptotic orbits in the Earth's magnetic field, 1531; *see also* ALFVÉN, H.

MALMQUIST, K. G. On some formulae for the computation of space densities, 465

MALOFF, I. G., and EPSTEIN, D. W. Reflective optics in projection television, 2871

MANDEL, E. *See* BUTLER, E. T.

MANI, A. Spectroscopic study of luminescence patterns in diamond, 571; Polarization of Raman scattering and of fluorescence in diamond, 576

MANJOINE, M. J. Furnace temperature control, 2991

MANLEY, J. J. Recent improvements in a precision balance and the efficacy of rhodium plating for standard weights, 1270

MANLEY, R. G. Response of elastically mounted bodies to rapid accelerations, 2199

MANN, C. W. *See* SEYER, W. F.

MANN, D. W. *See* EDSALL, J. T.

MANN, J. *See* DAVID, W. T.

MANNING, W. R. D. The overstrain of tubes by internal pressure, 1260

MANOV, G. G., DELOLLIS, N. J., and ACREE, S. F. Ionization constant of boric acid and the *p*H of certain borax-chloride buffer solution from 0° to 60° C., 1082; Liquid-function potentials, and relative activity coefficients of chloride ions, in concentrated mixed chlorides and nitrates at 25° C., 1092; Comparative liquid-junction potentials of some *p*H buffer standards and the calibration of *p*H meters, 2475

MANRING, W. E. Demineralization of water by ion exchange, 1080

MANUELE, J., and GOFFMAN, C. Statistical tools for controlling quality, 2109

MARBLE, F. G. Aircraft vibration analyser, 1331

MARDLES, E. W. J. *See* LAHIRI, A.

MARGENAU, H. The forces between a hydrogen molecule and a hydrogen atom, 1323; *see also* MEYEROTT, R.

MARGENAU, H., and MYERS, V. W. The forces between water molecules and the second virial coefficient for water, 1324

MARGENAU, H., and SETLOW, R. B. Atomic and molecular theory since Bohr: résumé of specific results, 2367

MARGENAU, H., and WIGHTMAN, A. Atomic and molecular theory since Bohr: logical and mathematical survey, 996

MARHOEFER, C. J. *See* WIEDENBECK, M. L.

MARIËNS, P. *See* VAN ITTERBEEK, A.

MARION, A. P. *See* KING, C. V.

MARK, C. *See* LEHNER, J.

MARK, H. Some applications of ultrasonics in high-polymer research, 1338; *see also* DOTY, P. M.; PFANN, H. F.

MARLAND, E. A. *See* PLANER, F. E.

MARSDEN, E., and WATSON-MUNRO, C. Radioactivity of New Zealand soils and rocks, 2034

MARSDEN, E. *See also* HODGSON, H. H.

MARSDEN, S. S., JR. A method for X-ray examination of systems containing varying amounts of a volatile component, 2398

MARSHALL, H. L. *See* MACINTIRE, W. H.

MARSHALL, M. J. *See* MCMAHON, H. O.

MARTIN, H. W. *See* COX, A.

MARTIN, S. L. H. *See* HALL, M. N. A.

MARTIN, W. T. *See* CAMERON, R. H.

MARTINDALE, J. G. A new method of measuring the irregularity of yarns with some observations on the origin of irregularities in worsted slivers and yarns, 2386

MARTON, L. On electron microspectroscopy, 615; *see also* GRAY, C. H.; SCHULTZ, E. W.

MARYOTT, A. A., and ACREE, S. F. The dipole moment and structure of trioxane, 284

MASKELL, W. G. Some applications of physics in power-plant engineering, 2731

MASLOV, A. The effects of local applications of cold upon the electrical resistance of the skin, 249

MASON, L. S. A thermopile for microcalorimetry, 218

MASSA, F. A working standard for sound pressure measurements, 2847

MASSIE, G. M., and WARNER, A. E. Vulcanization and heat ageing of GR-S, 662

MAST, W. C., REHBERG, C. E., DIETZ, T. J., and FISHER, C. H. Vulcanization of saturated acrylic resins, 2652

MAST, W. C., SMITH, L. T., and FISHER, C. H. Vulcanized acrylic resins. Copolymers of ethyl acrylate and allyl maleate, 2653

MAST, W. C. *See also* FISHER, C. H.

MATARE, H. F. Brownian movement and resistance noise, 1682

MATHER, K. B. A comparator for spectrographic analysis, 2969

MATHIESON, D. R. *See* STOLL, A. M.

MATSEN, F. A., GINSBURG, N., and ROBERTSON, W. W. The near ultra-violet absorption spectrum of phenol vapour, 2933

MATSEN, F. A., and WALKEY, J. E. The thermal expansion and compressibility of a three-dimensional system of harmonic oscillators, 2285

MATSEN, F. A. *See also* GINSBURG, N.

MATSUYAMA, G. *See* KOLTHOFF, I. M.

MATTA, K., and MOKHTAR, M. The velocity of sound in vapours, 155
MATTOX, W. J. Effects of temperature, contact time, and water vapour on the olefine-aromatic ratio in the dehydrogenation of *n*-heptane with chromia-alumina, 1566
MAYER, J. E. *See* DOTY, P. M.; MCMILLAN, W. G., JR.; ZIMM, B. H.
MAYLAND, B. J. *See* COMINGS, E. W.
MAYNEORD, W. V. Measuring X-rays, 3027
MAYO, F. R., and DOLNICK, A. A. Rearrangement of alkyl halides, 336
MAYO, F. R., and LEWIS, F. M. Copolymerization. I. A basis for comparing the behaviour of monomers in copolymerization; the copolymerization of styrene and methyl methacrylate, 1053
MEAD, D. J. *See* FUOSS, R. M.
MEBS, R. W. *See* MCADAM, D. J., JR.
MECHEELS, O. Seven questions concerning impregnation, 2070
MECKLER, W. G. *See* RUCHHOFT, C. C.
MEEK, J. M. *See* CRAGGS, J. D.
MEEKER, W. F., and SLAYMAKER, F. H. A wide-range adjustable acoustic impedance, 1345
MEES, C. E. K. Direct processes for making photographic prints in colour, 772
MEGAW, H. D. Crystal structure of barium titanate, 2566
MEGAW, H. D., and STOKES, A. R. Breadths of X-ray diffraction lines and mechanical properties of some cold-worked metals, 2589
MEGGERS, W. F. *See* HUMPHREYS, C. J.
MEHL, J. W. *See* EDSALL, J. T.
MEHLER. P. Frictional dispersion of the permittivities of organic fluids in relation to the wavelength, 2295
MEI, J. Y. *See* WANG, J. S.
MEILI, E. Characteristics of the Townsend discharge and the effect of irradiation of the cathode, 3022
MEISTER, A. G., and CLEVELAND, F. F. Raman spectra of some disubstituted diacetylenes, 917; Raman spectrum of dimethyldiacetylene, 1426
MEIXNER, J. On the thermodynamics of irreversible processes in gases with chemically reacting, dissociating and excitable components, 2284
MELCHER, D. The structure of the Huggins-band for ozone, 2932
MELDAHL, A. A contribution to the application of the theory of constant energy of deformation, 314; Why does a gear sing? How can the singing be avoided? 2853
MELLANDER, O. Electrophoretic and enzymatic fractionation of casein from human milk, 3019
MELLON, M. G. Light-absorption spectrometry, 1770; *see also* MITCHELL, A. M.
MELLORS, J. W. *See* SCOTT, R. B.
MELMORE, S. Open packing of spheres, 1189
MENDELSOHN, L. I. Basic concepts of moving-magnet-instrument rotors, 2353
MENDELSOHN, N. S. A group-theoretic characterization of the general projective collineation group, 792
MENDELSSOHN, K. The frictionless state of aggregation, 3016
MENKART, J. *See* SPEAKMAN, J. B.
MENTSER, M. *See* VON ELBE, G.
MERCHANT, M. E. Basic mechanics of the metal-cutting process, 500; Mechanics of the metal cutting process. II. Plasticity conditions in orthogonal cutting, 2419
MEREDITH, R. The tensile behaviour of raw cotton and other textile fibres, 2385
MERING, J. *See* LAMARQUE, P.
MERRILL, P. W., and SANFORD, R. F. Spectroscopic observations of 48 Librae, 826
MERRILL, R. C. *See* OWENS, H. S.
MERRINGTON, A. C. Elastic recovery in capillary flow, 2801
MESCHERYAKOV, M. G. *See* ALKHAZOV, D. G.
MESNY, M. Internal-combustion-engine cycles, 1504
MESSENGER, H. A. *See* WEBB, H. W.
METCALFE, W. K. Economical air-handling in paper mills, 1600
MEYER, K. A. G. Results of aerosol research in science and engineering, 1932–1942. I, 1102
MEYERHOF, O. *See* FRUTON, J. S.
MEYEROTT, R. Exchange forces between Li^+ and He, and the mobility of Li^+ in He, 985
MEYEROTT, R., and MARGENAU, H. On film formation of water flowing through thin cracks, 2185
MEYEROVICH, L. Physical bases of "induced e.m.f." methods, 2358
MEYERS, C. H. *See* SCOTT, R. B.
MIBASHAN, A. On some physical properties of normal paraffins, 2977
MICHAL, A. D. Studies on geodesics in vibrations of elastic beams, 1629
MICHELS, A., BLAISSE, B., TEN SELDAM, C. A., and WOUTERS, H. M. The vapour pressure of water in the neighbourhood of 100° C., 1477
MICKLEY, H. S. *See* STOCKMAYER, W. H.
MIDDEL, H. D. Electronics in instrumentation, 836
MIEHLE, W. *See* CORRINGTON, M. S.
MIKHAIL, H., and BADDAR, F. G. The magnetic susceptibility of certain organic compounds. I. The constitution of the *p*-benzoquinone quinol, and quinhydrone system, 1527
MIKLOWITZ, J. *See* EVERETT, F. L.
VAN MILAAN, J. B. *See* BURGER, H. C.
MILES, G. D. Minima in surface-tension and interfacial-tension curves, 2799
MILES, G. D., and ROSS, J. Foam stability of solutions of soaps of pure fatty acids, 876
MILES, G. D., SHEDLOVSKY, L., and ROSS, J. Foam drainage, 2806
MILES, J. The reflection of sound due to a change in cross-section of a circular tube, 535
MILES, J. R. A simple formula for lens design, 2872
MILLER, A. E. *See* LYNN, J. G.
MILLER, A. J., and HUNT, H. Heats of combustion. III. The heats of combustion of some polynitroparaffins, 1812
MILLER, B. L. Electron and X-ray diffraction study of the grain-boundary substance in cadmium, 1023
MILLER, C. O., and BARLEY, R. C. Correlation of vapour-liquid equilibria data for hydrocarbons, 1561
MILLER, E. S. *See* BARNES, R. H.
MILLER, F., JR. Auger electrons resulting from *K*-capture, 3035
MILLER, F. D., and RUSHTON, J. H. A mass-velocity theory for liquid agitation, 328
MILLER, G. A. Possible numbers of non-invariant operators of a group, 453; Groups containing less than twenty-eight non-invariant operators, 794; Groups involving a small number of sets of conjugate operators, 1220; Groups having a small number of sets of conjugate subgroups, 2693; Illustrations and simple abstract proof of Sylow's theorem, 2694
MILLER, J. C. P., and JONES, C. W. Notes on the evaluation of zeros and turning values of Bessel functions. IV. A new expansion, 2681
MILLER, J. C. P. *See also* BICKLEY, W. G.
MILLER, J. G. *See* SENIOR, K. L.
MILLER, P. H., JR. Variable-speed motor and electric tachometer, 860
MILLER, S. A. *See* COOPER, C. M.
MILLER, V. A. Ternary mixture of three isomeric heptanes, 1730
DE MILLEVILLE, H. Quadripole nomegrams. Their application to transmission lines, 2098
MILLIGAN, W. O. A review of the application of X-ray and electron diffraction methods to contact catalysis, 2592
MILLIKAN, R. A., NEHER, H. V., and PICKERING, W. H. Further studies on the origin of cosmic rays. Helium annihilation rays and the cause of their variability with time, 1876
MILNE, E. A. The ageing of light, 1748; Kinematic relativity: a reply to W. Wilson, 2735; *see also* CAMM, G. L.; DINGLE, H.; HALDANE, J. B. S.
MILNER, B. I. *See* SAUNDERSON, J. L.
MILNER, O., PROCTOR, K. L., and WEINBERG, S. Application of colorimetry to the analysis of corrosion-resistant steels, 2226
MIN, S. H. *See* HUA, L. K.
MINDLIN, R. D. Optical aspects of three-dimensional photoelasticity, 922
MINNHAGEN, L. The Stark effect of certain multiplets, 2296
MINORSKY, N. On mechanical self-excited oscillations, 889

MIRIANASHVILLI, G. *See* ALICHANIAN, A.; ALICHANOW, A.

MIRSKY, L. *See* BABER, T. D. H.

VON MISES, R. Integral theorems in three-dimensional potential flow, 1709

MISKEL, J. J. Surface activity and its application to paper, 134

MITCHELL, A. M., and MELLON, M. G. Colorimetric determination of nickel with dimethylglyoxime, 2866

MITCHELL, S., and DAWSON, I. M. The asymmetric photolysis of β-chloro-β-nitroso-$\alpha\delta$-diphenylbutane with circularly polarized light, 361

MITRA, R. P. *See* MUKHERJEE, J. N.

MITRA, S. K. A new method of solution of the boundary value problems of Laplace's equation relating to two spheres. I, 65; Active nitrogen and N_2^+ (X′) ions, 256; Variations in the after-glow brightness of active nitrogen under varied experimental conditions, 257; Energy imparted by active nitrogen, 1521; Night-sky emission and region F ionization, 2725

MITRA, S. N. *See* KAR, K. C.

MOBBS, F. R. *See* DAVID, W. T.

MODRINIAK, N. Geophysical investigation of the Puhipuhi mercury deposit, 2032

MOEDE, J. A. *See* HARTMAN, R. J.

MOELLER, T., and KREMERS, H. E. Observations on the rare earths. LI, 1087

MOESSEN, G. W. *See* ASTON, J. G.

MOGERMAN, W. D. Determination of tin in non-ferrous metals by distillation as bromide and precipitation with cupferron, 1127

MOIR, J. Acoustics of small rooms, 552

MOKHTAR, M. *See* MATTA, K.

MOLLOY, C. T. Propagation of sound in lined ducts, 536; *see also* GROSSMAN, F. M.

MOLLOY, C. T., and HONIGMAN, E. Attenuation of sound in lined circular ducts, 2207

MONDRIA, H. *See* KRONIG, R.

MONTANDON, R. *See* ZSCHOKKE, H.

MONTEIRO, A. Characterization of the operation of closure by means of a single axiom, 1221

MONTEUX, Y. On the penetration of electrons in matter, 2291

MONTEUX, Y., OCCHIALINI, G., and DE SOUZA SANTOS, M. D. The influence of a solar eclipsis on the cosmic ray intensity, 2334

MONTGOMERY, C. W. *See* HAY, R. G.

MOODY, A. M. G. The axial vibration of turbine discs, 1327

MOODY, L. F. Friction factors for pipe flow, 1294

MOOKHERJI, A. Magnetic studies on potassium permanganate, 1901

MOON, P., and SPENCER, D. E. Brightness and helios, 554; Visual data applied to lighting design, 933; A modified photochemical theory of vision, 1446; The transient Stiles–Crawford effect, 1451; Visual effect of non-uniform surrounds, 2264; Analytical representation of trichromatic data, 2957

MOORE, A. J. W. *See* BOWDEN, F. P.

MOORE, C. E. *See* RUSSELL, H. N.

MOORE, G. E. *See* KELLEY, K. K.

MOORE, H. F. Shot peening and the fatigue of metals, 2012

MOORE, J. W., and ANDERSON, R. C. Kinetics of the reaction of cerium^{IV} and arsenic^{III} ions, 1062

MOORE, R. L. Concerning tangents to continua in the plane, 1649

MOORE, R. L., and ANDERSON, R. C. Spectrophotometric studies on cerium (IV) sulphate complex ions, 2224

MORALES, M. F. A note on equations of growth, 59; *see also* SMITH, R. E.

MORALES, M. F., and KREUTZER, F. L. Some nutritional and excretional interactions and the growth of an organ or colony, 2056

MORALES, M. F., and SMITH, R. E. On the theory of blood-tissue exchanges. III. Circulation and inert-gas exchanges at the lung with special reference to saturation, 2053; A note on the physiological arrangement of tissues, 2638

MORAN, P. A. P. Surface area of small objects, 109

MORDELL, L. J. Rational points on cubic curves and surfaces, 28

MOREHOUSE, W. B. Chemical defoamers in the manufacture of pulp and paper, 1725

MORELAND, H. D. Electronic X-ray timer, 2657

MORELLI, D. A. Ellipses of inertia, 2152

MORGAN, J., and BOHN, J. L. Experiments on the theory of the action of the Geiger point counter, 647

MORGAN, R. H. An analysis of the physical factors controlling the diagnostic quality of Roentgen images, 3033

MORKOVIN, V. On the deflection of anisotropic thin plates, 311; Membrane stresses in shells of constant slope, 1256; *see also* KINCAID, W. M.

MORRIS, A. A. An apparatus to be used in recording tremors, 153

MORRIS, J., and HEAD, J. W. The "escalator" process for the solution of Lagrangian frequency equation, 1182

MORRISON, I. F., BESKIN, L. Representations of rigid rotations, 1689

MORSE, P. M., and BOLT, R. H. Sound waves in rooms, 2212

MORTON, H. E. Availability of electron micrograph for instruction in microbiology, 2051

MORTON, M. C. *See* ANDERSON, J. S.

MORTON, R. A. *See* CHALMERS, T. A.

MOSHER, R. H., and GRIFFIN, J. B. Physical strength properties of moulded fibre-resin preformed materials, 3145

MOSKOVITZ, D. The numerical solution of Laplace's and Poisson's equations, 1202

MOSS, H. A space charge problem, 2312

MOULLIN, E. B. An elementary description of some molecular concepts of the structure of dielectrics, 599

MRGUDICH, J. N., and CLOCK, R. C. X-ray and electron microscope evaluation of carbon blacks, 3039

MROWCA, B. A., DART, S. L., and GUTH, E. Retraction and stress propagation in natural and synthetic gum and tread stocks, 1690

MROZOWSKI, S. Forbidden lines λ2 967·5 and λ2 269·8 of mercury HgI, 1768; Forbidden lines in the laboratory, 2894

MUDD, S. *See* SMITH, W. E.

MUEHLER, L. E. *See* CRABTREE, J. I.

MUELLER, C. W. The secondary electron emission of Pyrex glass, 3044

MUELLER, E. R. Resinous ion exchange applications, 1086

MUHI, F. *See* RAHMAN, S. F.

MUKHERJEE, J. N., and CHATTERJEE, B. Electrochemical properties of silicic acid sols, 2016; Liberation of H+, Al+++ and Fe+++ ions from hydrogen clays by neutral salts, 2446

MUKHERJEE, J. N., and INDRA, M. K. Diagnostic characteristics of crude oil: fluorescence analysis in ultra-violet light, 2935

MUKHERJEE, J. N., and MITRA, R. P. Differentiation of hydrogen clays and identification of their mineral constituents by electrochemical and viscous methods, 1572

MUKHERJEE, J. N., and MUKHERJEE, S. K. Effect of hydrogen ion concentration on cation exchange in clay salts, 2017

MUKHERJEE, P. L. The crystal structures of metallic fluoberyllates, double fluoberyllates and sulphato-fluoberyllates, 2570

MUKHERJEE, S. K. *See* MUKHERJEE, J. N.

MULDER, D. *See* NAWIJN, A.

MULDERS, E. S. *See* NICHOLSON, S. B.

MULLANEY, J. F. Optical properties and electronic structure of solid silicon, 1430

MÜLLER, F. H. On the diffusion of inert gases through different organic foils and its relation to aqueous permeability. Diffusion of gases through high polymers. II, 1312

MÜLLER, O. H. The characterization of capillaries used for dropping-mercury electrodes in polarographic studies, 132

MULLINS, L. Measurement of the modulus of sheet rubber by means of indentation tests, 3085

MULLINS, L. J. *See* FENN, W. O.

MUNDEL, A. B. *See* CARLISLE, R. W.

MUNRO, L. A. Protective colloids in cancer, 364

MURACA, R. F. *See* SERFASS, E. J.

MURDOCK, C. C. Coulomb's law and the dielectric constant, 272

MURGATROYD, J. B. The mechanism of brittle rupture in glass, 2434

MURNAGHAN, F. D. The compressibility of media under extreme pressures, 1026; On the teaching of mathematics, 1174; A modern presentation of quaternions, 1187; On the theory of the tension of an elastic cylinder, 1990

MURRAY, A. *See* FROMMER, L.; YULE, J. A. C.

MURRAY, C. S. *See* WEBB, R. L.

MURRAY, M. J. *See* KOMAREWSKY, V. I.

MUSKAT, M. The production histories of oil-producing gas-drive reservoirs, 2177

MUSTAFA, A. *See* SCHÖNBERG, A.

MUZAFFAR, S. D., and CHAND, R. Equilibrium of the ternary system bismuth–lead–zinc, 1045

MYERS, V. W. *See* MARGENAU, H.

MYKLESTAD, N. O. New method of calculating natural modes of coupled bending-torsion vibration of beams, 1740

MYSELS, K. J. *See* LAMB, A. B.

NACHOD, F. C., and WOOD, W. The reaction velocity of ion exchange. I and II, 1061, 3096

NADAI, A. Wave equation for finite elastic strains, 2407

NADIG, F. W. *See* SMITH, H. A.

NAMIAS, J. Construction of 10 000 ft. pressure charts over ocean areas, 2039

NANDA, J. N. Non-coulomb central field for potassium atom, 1926

NARAYANA, P. Y. The thermal decomposition of mercuric fulminate, 2456

NARLIKAR, V. V. The deflection of light and relativity, 88

NASON, H. K. *See* CARDSWELL, T. S.; LAWTON, T. S., JR.

NASSAU, J. J. *See* SEYERT, C. K.

NAUDÉ, S. M. Rotational analysis of the S_2 band spectrum, 2239

NAUGHTON, J. J. *See* HOFF, R. L.

NAUMANN, K. Fastness properties of natural brown colouring matters on wool. III, 1777; *see also* BRASS, K.

NAWIJN, A. The mechanism of the Geiger-Müller counter, 1939

NAWIJN, A., and DE JONG, J. The mechanism of the Geiger-Müller counter. II, 1940

NAWIJN, A., and MULDER, D. The mechanism of the Geiger-Müller counter. III, 1941

NAYLOR, B. F. High-temperature heat contents of ferrous and magnesium chromites, 961; Heat contents at high temperatures of magnesium and calcium fluorides, 1487; High-temperature heat contents of sodium metasilicate and sodium disilicate, 2439; The heat content of manganese at high temperatures, 3004; *see also* SHOMATE, C. H.

NAYLOR, W. H. Spectral methods and their application in the petroleum industry, 171

NAZZARO, R. T. General aspects of GR-S rubber saturants, 751

NEHER, H. V. *See* MILLIKAN, R. A.

NEISH, A. C. Kinetics of the catalytic dehydrogenation of alcohols and glycols in the gaseous state, 2459

NELSON, J. B., and RILEY, D. P. An experimental investigation of extrapolation methods in the derivation of accurate unit-cell dimensions of crystals, 2586

NELSON, J. B. *See also* LIPSON, H.

NELSON, R., and WALTON, H. F. Cation exchange at high *p*H, 1083

NELSON, R. B. An a.c. operated leak detector and ionization gauge, 1733

NEMENOV, L. *See* ALICHANOW, A.

NETTLETON, L. L. *See* HAMMER, S.

NEUBAUER, F. J., and STRUVE, O. The spectrum of RZ Scuti, 2715

NEUBERGER, H. On the measurement and frequency of traces of precipitation, 2036

NEUMANN, R. *See* PIRANI, M.

NEUWORTH, M. B. *See* JONES, R. C.

NEVIN, T. E. The spectrum of manganese hydride, MnH. II. The structure of the $A^7\Pi$ and $X^7\Pi$ states, 1769

NEWELL, W. C. The determination of nitrogen in ferro-alloys and other materials by direct Nesslerization without distillation, 2551

NEWING, R. A. Kinematic relativity, 2734

NEWMAN, C. A. Recovery of wood and fibre wastes, 1596

NEWMAN, M. S. *See* SCHAEFGEN, J. R.

NEWSOME, P. T. *See* SHEPPARD, S. E.

NICHOLSON, S. B. Orbit of the ninth satellite of Jupiter, 796

NICHOLSON, S. B., and MULDERS, E. S. Solar and magnetic data, April to June, 1944, Mount Wilson Observatory, 718, 2606, 2607

NICKERSON, D. Munsell standard colours specified for four illuminants, 2259

NICKERSON, D., KELLY, K. L., and STULTZ, K. F. Colour of soils, 2260

NICKERSON, D., and STULTZ, K. F. Colour tolerance specification, 582

NIEDERL, J. B., and KASANOF, D. R. Molecular weight by isothermic distillation, 369

NIELSEN, A. H., and NIELSEN, H. H. The infra-red absorption spectrum of deutero-methyl chloride, 2923

NIELSEN, C. E. Control of glycol vapour concentration in room air, 586

NIELSEN, H. H. The energies of polyatomic molecules, 640; The quantum-mechanical Hamiltonian for the linear polyatomic molecule treated as a limiting case of the non-linear polyatomic molecule, 997; *see also* NIELSEN, A. H.

NIELSEN, J. R., THORNTON, V., and DALE, E. B. The absorption laws for gases in the infra-red, 2915

NIGHTINGALE, E. Spectrum formed on a cloud, 414

NIJBOER, B. R. A. The diffraction theory of optical aberrations. I. General discussion of the geometrical aberrations, 1366

NIKONOV, V. V. Radiometric observations of the solar corona during the eclipse of 1941, September 21, 1661

NILSSON, A. *K*-absorption spectrum of chlorine in the gaseous chloromethanes, 1514; *see also* LINDH, A. E.

NISSAN, A. H. *See* GRUNBERG, L.

NIVEN, J. I., and BROWN, R. H. Visual resolution as a function of intensity and exposure time in the human fovea, 1455

NIXON, E. R. *See* CROSS, P. C.

NOLAN, P. J., and GALT, R. I. The equilibrium of small ions and nuclei, 1871

NOLL, A. Microscope stain for mixtures of unbleached fibres, 1788

NORDELL, E. Demineralizing of water for the pulp and paper industries, 1085

NORDSIECK, H. *See* FERGUSON, R. H.

VAN NORDSTRAND, R. A. *See* RIES, H. E., JR.

NORELLI, P., and GARD, W. H. Effect of temperature on strength of laminates, 2416

NORMAN, D. P., and JOHNSON, W. W. A. Spectrographic limit of detection of phosphorus titanium and zirconium in the direct current arc, 2537

VAN NOSTRAND, R. J. *See* STILLINGS, R. A.

NOYES, W. A., JR. *See* HOWLAND, J. J., JR.

NUTTING, P. G. Energies of solution of silica in water and HCl, 142; A general stress/strain/time formula, 1025; The retention of fluids by solids, 1113

OAKES, W. G. *See* HUNTER, E.

OBREIMOV, I. V., and SHABALDAS, C. G. Fluorescence of naphthalene crystals, 2941

O'BRIEN, H. C. *See* HAVENHILL, R. S.

O'BRIEN, H. C., JR. A pigment dispersion method for electron microscopy, 2022

OBRUCHEV, V. A. Loess types and their origin, 2627

O'BRYAN, H. M. Rayleigh interferometers for gas analysis, 1431

OCCHIALINI, G., and SCHÖNBERG, M. On the ultra-soft component of the cosmic radiation, 2331

OCCHIALINI, G., and DE SOUZA SANTOS, M. D. Two useful gadgets for controlled Wilson chambers, 2374

OCCHIALINI, G. *See also* MONTEUX, Y.

O'CEALLAIGH, C., and MACCÁRTHAIGH, M. D. A convenient method of measuring the intensity of nuclear scattering of fast β-particles in the cloud chamber, 1863

O'CONNOR, R. T., and JEFFERSON, M. E. An arc source for ultra-violet absorption spectroscopy, 562

O'DOHERTY, J. J. Persistence of luminosity in air, 416

O'DONOVAN, J. J. Moving loads on beams fixed at both ends and on propped cantilevers, 1251

OETJEN, R. A., and RANDALL, H. M. The infra-red spectra of the isomeric octanes in the vapour phase, 2897

OETJEN, R. A., RANDALL, H. M., and ANDERSON, W. E. The infra-red spectra of the isomeric octanes in the liquid phase, 2896

OGLE, W. E., and KRUGER, P. G. Pair electrons formed in the field of an electron, 1865

OGLE, W. E. *See also* KRUGER, P. G.

OHLIN, P. New determinations of h/e with X-rays, 89; Structure in the short-wavelength limit of the continuous X-ray spectrum, 258

OHLSSON, E. *See* BORELIUS, G.

ÖHMAN, Y. On some applications of the flicker method in photo-electric measurements, 558

OLCOTT, H. S. *See* REITZ, H. C.

OLDENBERG, O. Analysis of excitation functions, 2290; *see also* DWYER, R. J.

OLDFIELD, J. H. *See* CONVEY, J.

OLDS, R. H. *See* REAMER, H. H.

DE OLIVEIRA, A. M. Radio wave propagation and cosmic rays, 2342

OLIVER, G. D., and BICKFORD, W. G. Device for electronic control of reduced pressure, 1734

OLLERENSHAW, K. The minima of a pair of indefinite, harmonic, binary quadratic forms, 2660

OLSEN, L. O., SMITH, C. S., and CRITTENDEN, E. C., JR. Equipment and techniques for evaporation of metals, 1473

OLSEN, L. O. *See also* SMITH, C. S.

OLSON, A. R., and TONG, L. K. J. The interpretation of the effects of salts on the rates of some hydrolytic reactions, 1063

OLSON, R. W. *See* SHOOK, E. M.

ONCLEY, J. L. *See* SCATCHARD, G.

O'NEILL, H. The significance of tensile and other mechanical test properties of metals, 308

OPATOWSKI, I. On the form and strength of trees. I. The trunk, 734; II. The primary branches. III. The secondary branches and their relation to the primary branches, 1591, 1592

OPECHOWSKI, W. On the average life of mesons of cosmic radiation, 1875

OPPELT, W. On the degree of damping in the third-order differential equation of regulation, 1626

OPPENHEIMER, H. *See* REYERSON, L. H.

ORR, J. Experiments on the effect of residual stress on the strength of welded constructions, 1555

OSBORN, J. A. Demagnetizing factors of the general ellipsoid, 3061

OSBORNE, M. F. M., and HART, S. D. Transmission, reflection, and guiding of an exponential pulse by a steel plate in water. I. Theory, 2837

OSEEN, C. W. Contributions to the analytical theory of tides. III–V, 84

OSGOOD, T. H. Physics in 1944, 2139

OSTER, G. The dielectric properties of dipolar ions in mixed solvents, 238

OSTER, G., PRICE, D., JOYNER, L. G., and KIRKWOOD, J. G. The dielectric constants of solutions of glycine and pyridine betaine in water-dioxane mixtures, 239

OSTERBERG, H. Phase-difference microscopy as a problem in diffraction, 1459

OSTOW, M. Electricity as a pathogenic agent in the central nervous system, 242

OSWIN, C. R. The kinetics of package life. II. The temperature factor, 3139

OTHMER, D. F., and GILMONT, R. Correlating vapour compositions and related properties of solutions, 946

OTHMER, D. F., KOLLMAN, R. C., and WHITE, R. E. Gas-liquid solubilities and pressures in presence of air, 883

OTHMER, D. F. *See also* SAWYER, F. G.

OVERMAN, R. T. *See* AMIS, E. S.

OWEN, D. Directional loci in a magnetic field, and the locating of neutral points, 3058

OWEN, E. A., and EDMUNDS, I. G. Study of the relative intensities of lines in fibre X-ray camera photographs, 1982

OWEN, E. A., and ROBERTS, E. A. O'D. The solubility of certain metals in gold, 2440

OWENS, H. S., LOTZKAR, H., MERRILL, R. C., and PETERSON, M. Viscosities of pectin solutions, 510

PA, C. K. An analogue of the Darboux pencil of quadrics, 26

PADHYE, M. R. *See* ASUNDI, R. K.

PALACIOS, J., and CALVO, L. L. Magnetization of nickel by unilateral compression, 2360

PALMER, G. *See* MACINTIRE, W. H.

PALMER, K. J., and LOTZKAR, H. Oriented fibres of sodium pectate, 3128

PANCHANG, G. M., and FRAMJI, K. K. A comparison between three expressions for back-water function, 1714

PANCHOLY, M., PANDE, A., and PARTHASARATHY, S. Ultrasonic velocities in some vegetable oils, 1334

PANCHOLY, M. *See also* PANDE, A.; PARTHASARATHY, S.

PANDE, A., PANCHOLY, M., and PARTHASARATHY, S. Simultaneous oscillations of a piezo-electric quartz at two frequencies, 1328

PANDE, A. *See also* PANCHOLY, M.; PARTHASARATHY, S.

PANKHURST, K. G. A. A simple single-wire surface pressure balance, 1302

PANKHURST, K. G. A., and SMITH, R. C. M. The adsorption of paraffin-chain salts to proteins. I. Some factors influencing the formation and separation of complexes between gelatin and dodecyl sodium sulphate, 699

PARDOE, W. S. The coefficient of Herschel type cast-iron Venturi meters, 2792

PARKER, E. D. *See* BURNETT, R. S.

PARKER, L. F. C. Identification of raw and vulcanized rubber-like polymers. II. Determination of swelling ratios, 2413

PARODI, H. On a particular solution of the equations of elasticity, 656; On a solution of the telegraphic equations, 2096

PARSHAD, R. Explanation of the Joshi effect, 2217; Explanation of the broadness and other characteristics of association bands, 2902

PARSON, A. L. Vapour pressure of solids at low temperatures (and the origin of the planets), 1475

PARTHASARATHY, S., PANDE, A., and PANCHOLY, M. A new phenomenon in the piezo-electric oscillations of a quartz crystal, 603; Transverse oscillations of a piezo-electric quartz crystal, 604

PARTHASARATHY, S. *See also* PANCHOLY, M.; PANDE, A.

PARTRIDGE, J. H., and SEAL, K. The glassy matrix in tank blocks, 323

PARTS, A. Thixotropy and dielectric constant of printing inks, 2498

PASCHKIS, V., and HEISLER, M. P. The influence of through-metal on the heat loss from insulated walls, 938

PASCHKIS, V. *See also* BRADLEY, C. B.

PASCU, E. *See* BADIN, E. J.

DU PASQUIER, P. Diffusion of rapid electrons through lead nuclei, 3043

PASSAMANECK, E. Colorimetric determination of minute amounts of nickel, 2549

PATANKAR, V. S. *See* TAWDE, N. R.

PATAPOFF, M. *See* HILL, T. L.

PATNAIK, B. B. Vibrations of air-columns in pipes, 891

PATRY, J. Fuchs's theorem and linear equations with periodic coefficients, 1199; A numerical method for solving linear equations with periodic coefficients, 1200; On the solution of linear differential equations with periodic coefficients, 1201

PATTERSON, C. C. *See* GLOCKLER, G.

PATTON, T. C. Graphical methods for temperature distribution with unsteady heat flow, 1466

PAULING, L. The light absorption and fluorescence of triarylmethyl free radicals, 905

PAYMAN, W. *See* DAVID, W. T.

PAYNE-GAPOSCHKIN, C. Notes on five eclipsing stars, 476; The eclipsing star BD Virginis, 813; The eclipsing star AR Monocerotis, 2126

PEACOCK, H. B. The geophysical history of Cayuga Field, Anderson County, Texas, 1139

PEACOCK, W. The measurement of absolute efficiencies of gamma-ray counters, 648

PEARLSON, W. H., and SIMONS, J. H. The mechanism of the hydrogen fluoride catalysed alkylation of toluene by *t*-butyl chloride, 2458

PEARSON, R., and EVANS, W. V. The electrolysis of the nitroparaffins, 681

PEARSON, T. F. The improvement of the citric-acid solubility of basic open-hearth slags containing fluorspar, 2810; *see also* BARR, W.

PEASE, D. C. The significance of the contact angle in relation to the solid surface, 2802; *see also* HARVEY, E. N.

PEFFER, E. L. *See* BLAIR, M. G.

PEKERIS, C. L. Comments on Bethe's theory of diffraction of electro-magnetic waves by small holes, 1530

PEKERIS, C. L., and WHITE, W. T. Differentiation with the cinema integraph, 447

PELC, S. R. A slide rule for the calculation of data concerning the use of radon in gamma-ray therapy, 1637

PENDSE, C. G. On the theory of seismometers, 542

PENG, H. W. The divergence difficulty of quantized field theories, 286; *see also* BORN, M.

PENG, H. Y. A result in a divisor problem, 2

PENN, W. D. Fundamentals of hearing-aid design, 1347

PENNEKAMP, E. F. H. *See* SMITH, H. A.

PENNEY, W. G. *See* GAYDON, A. G.

PEPINSKY, A. Contributions of science to an appreciation of music, 894

PEPPER, D. C. *See* POWELL, R. E.

PEPPER, J. M. Isolation and utilization of lignosulphonic acids, 2451

PEPPER, R. *See* MCGINNIS, C. S.

PERKINSON, T. F. Special slide rules for rapid calculation of locomotive performance, 1638

PERLITZ, H. Crystal structure of β-aluminium-magnesium alloy, 711

PERLMANN, G. E., and KAUFMAN, D. The effect of ionic strength and protein concentration in the electrophoretic analysis of human plasma, 3117

PERLS, T. A. Rotation of electrolyte between insulated poles of magnet, 3064

PERNICK, A. *See* PORITSKY, H.

PERRIER, A., and AZAD, A. A. Experimental laws of the new torsional-electric effect, 3020

PERRIER, F. Ionization of air by electrified dielectrics, 3048

PERRY, G. L. *See* LARSEN, R. G.

PERRY, R. L. Heat and vapour transfer in the dehydration of prunes, 206

PERRY, W. E. Wall- and salt-absorption corrections in radium-content measurements, 1943

PERSOZ, B. New method for measuring the specific heat of metals at high temperature, 2992

PETCH, N. J., ROOKSBY, H. P. α-tungsten, 382

PETERSON, C. A. *See* Robinson, H. A.

PETERSON, M. *See* OWENS, H. S.

PETTERSON, E. L. A representation of the irreducible polynomials of imaginary quadratic number fields, 12

PETTIT, E. The eruptive prominence of October 3, 1942, 463; Visual magnitudes of Nova Puppis 1942, 468; Effect of temperature on the wavelength of a transmission band of the interference polarizing monochromator, 798

PEANN, H. F., SALLEY, D. J., and MARK, H. Mechanism of peroxide-initiated styrene polymerization, 340

PHELPS, H. S., and KAHN, F. Galvanic corrosiveness of soil found by simple *p*H test, 702; Galvanic corrosion of soil waters, 2018

PHELPS, R. T., LANGER, A. L., and GULBRANSEN, E. A. Chemical electron microscopy, 2028

PHILIPOFF, W. The effect of aggregation (micelle formation) on viscosity, 1570

PHILIPP, H. J., and CONRAD, C. M. Control of elongation in highly stretched cotton tire cord, 1999

PHILLIPS, G. M., HUNTER, J. S., and SUTTON, L. E. An investigation of the occurrence of the co-ordinate or dative link by electric dipole-moment measurements, 2366

PHILLIPS, H. C. *See* KOCH, W.

PHILPOTTS, A. R. *See* WILLIS, H. A.

PHIPERS, R. F. *See* CAHN, R. S.

PI, T. H. Magnesium ion source for high intensity mass spectrograph, 1936

PIAGGIO, H. T. H. Expansion of coordinates of points of a plane curve in terms of s or ψ, 1612

PICKERING, W. H. *See* MILLIKAN, R. A.

PICKETT, G. Rate of rise of water in capillary tubes, 131; Application of the Fourier method to the solution of certain boundary problems in the theory of elasticity, 497

PICKFORD, R. W. Darkened violet in colour vision, 2967

PIDD, R. W. *See* CORK, J. M.

PIELEMEIER, W. H. Kneser's sound absorption nomogram and other charts, 2208; Observed classical sound absorption in air, 2854

PIERCE, J. R. Limiting stable current in electron beams in the presence of ions, 1518; A figure of merit for electron-concentrating systems, 2316

PIETENPOL, W. B., and WALZ, F. C. Resistance of carbon to carbon contact, 1838

PIGMAN, W. W. Optical rotation as an indication of aromatic substituent influences and intramolecular interaction, 189

PIGNOCCO, J. M. *See* TAYLOR, W. J.

PIHLSTRAND, F. *See* BORELIUS, G.

PILLAI, S. S. On m consecutive integers. IV, 1175; Bertrand's postulate, 1176, 2658; On the equation $2^x - 3^y = 2^X + 3^Y$, 2661

PILTZ, W. Acoustic feed-back in short-wave reception with super-heterodyne receivers, and its prevention, 2203

PINCHERLE, L. Electromagnetic waves in metal tubes filled longitudinally with two dielectrics, 635; The polarizing angle for reflection at the boundary between two absorbing media, 919

PINCUS, A. G. Note on low refraction and dispersion of beryllium fluoride glass, 1371

PINEGIN, N. I. Absolute photopic sensitivity of the eye in the ultra-violet and in the visible spectrum, 1152; Absolute scotopic sensitivity of the eye in the ultra-violet and in the visible spectrum, 1447

PINES, H., KVETINSKAS, B., KASSEL, L. S., and IPATIEFF, V. N. Determination of equilibrium for butanes and pentanes, 3095

PINKSTON, E. R. *See* ELDER, F. K.

PINKSTON, J. T. *See* THOMAS, C. L.

PIRANI, M., and NEUMANN, R. High vacuum gauges. I–IV, 1700

PIRENNE, M. H. *See* HECHT, S.; STILES, W. S.

PISMIS, P. The period-luminosity and the period-spectrum relations of cluster-type Cepheids, 2706

PITT, F. H. G. Monochromatism, 195

PITT, H. R. On the class of integro-differential equations, 1632

PITZER, K. S. Thermodynamics of gaseous paraffins. Specific heat and related properties, 951; *see also* GUTTMAN, L.; PROSEN, E. J.; WAGMAN, D. D.

PLANER, F. E., and MARLAND, E. A. Negative feedback in hearing aid amplifiers, 2852

PLANTE, E. C., and SUTHERLAND, K. L. The physical chemistry of flotation. X. The separation of ergot from rye, 133

PLATT, J. R., and KLEVENS, H. B. Spectroscopy of organic molecules in the vacuum ultra-violet, 2914

PLATT, J. R. *See also* RUSOFF, I. I.

PLEIJEL, A. On the distribution of the proper values of problems governed by the equation $\Delta u + \lambda k(x, y)u = 0$, 64

PLESSET, M. S. *See* VAN HARREVELD, A.

PLUMB, D. S. Vinyl butyrals in the rubber industry, 1601

PLUMB, H. T. Fluorescence aids mining, 182

POCKLINGTON, H. C. Quadratic and higher reciprocity of modular polynomials, 1608

PODOLSKY, B., and KIKUCHI, C. Auxiliary conditions and electrostatic interaction in generalized quantum electrodynamics, 1906

POE, C. F. *See* HULTQUIST, M. E.

POLANYI, M. *See* BUTLER, E. T.

POLGÁR, A. *See* ZECHMEISTER, L.

POLIVANOV, K. M. The structure of a ferromagnetic and the permeability/frequency curves, 1902

POLLAK, H., and WILSON, D. G. Absolute and differential light sensitivity of the dark-adapting eye, 2959

POLLARD, W. G. Charge neutralization by atmospheric ions, 1870

POLSON, A. A new method for measuring diffusion constants of biologically active substances, 1305

POMERANCHUK, I. On the interpretation of experiments referring to extensive cascade showers, 2339

POMPEIA, P. A., DE SOUZA SANTOS, M. D., and WATAGHIN, G. Showers of penetrating particles under 30 m of clay, 2337

POMPEIA, P. A., and WOLLAN, E. O. An electrical timing circuit to control a cloud chamber, 2375

POMPEIA, P. A. *See also* HILBERRY, N.

POOL, M. L. Potential nuclear monokinetic electron sources, 1540; *see also* EDWARDS, J. E.; HIBDON, C. T.; WEIMER, P. K.

OOL, M. L., and EDWARDS, J. E. Radioactive zirconium and columbium, 1949
OPE, A. Notes on the problem of colour harmony and the geometry of colour space, 1440
OPPER, D. M. Studies of faint B-type stars. II, 828
OPPER, E. *See* SPACU, G.
ORITSKY, H., SUTTON, A. D., and PERNICK, A. Distribution of tooth load along a pinion, 2757
ORTER, C. C., and HELLERMAN, L. Porphyrexide and porphyrindine analogies derived from 1-hydroxy-aminocyclohexyl cyanide, 1093
ORTER, J. G. An analysis of British meteor data. II. Analysis, 1658
OST, O. W. *See* CRAIG, L. C.
OTTER, E. V., and HUBER, R. W. Effect of hydrogen on the X-ray parameter and structure of electrolytic manganese, 3032
OTTER, W. M. *See* CARLSON, F. E.
OWELL, F. C. The dynamics of a simple system. I. Observables, 1688
OWELL, H. *See* GORDON, R. R.
OWELL, M. G. *See* SIMONS, J. H.
OWELL, R. E., EYRING, H., ELEY, D. D., and PEPPER, D. C. Mechanisms for the relaxation theory of viscosity, 115
OWER, S. C. Note on the influence of damping on the Compton scattering, 1856
OWERS, P. O., and BILLMEYER, B. R. Swelling of synthetic rubbers in mineral oils, 2412
RAGER, R. GR Carinae, 477
RASAD, K. N. *See* CHATTERJEE, L. M.
RASAD, M., DHARMATTI, S. S., and GOKHALE, S. V. Magnetic susceptibilities of calcium and strontium ions, 1526
RATHER, J. L. *See* RANDS, R. D., JR.
RATT, M. H. Ageing of transformer insulation computed, 2685
REBUS, A. F., ZLOTOWSKI, I., and KRON, G. The application of network analysis to some electron-optical problems, 1859
REBUS, A. F. *See also* ZLOTOWSKI, I.
RESSMAN, D., and YOUNG, W. G. The reaction of dibromides of mono-substituted ethylenes with potassium iodide, 349
RESSMAN, D. *See also* LUCAS, H. J.
RESTON, G. D. Microscopy with light, electrons and X-rays, 897
RETTYMAN, I. B. *See* DILLON, J. H.
RIBYL, E. *See* HAHN, C.
RICE, D. *See* OSTER, G.
RICE, E. H., and GILLULE, W. J. Marine navigation aids. The ratio direction-finder, and the gyro-compass, 501
RICE, W. C., and WALSH, A. D. The absorption spectra of triple bond molecules in the vacuum ultra violet, 2926
RIDEAUX, E. B. R. Diffusion potentials and mobilities of multivalent ions: potassium ferricyanide and ferrocyanide, 1078
RINGLE, R. W. *See* FÜRTH, R.
RINGSHEIM, P. *See* HUTTEN, E. H.
ROCA, A. Non-conservative fundamental particles, 1536
ROCTOR, K. L. *See* MILNER, O.
ROJECTOR, T. H., and BARBROW, L. E. An oscillographic method for the photometry of photographic flash lamps, 2227
ROSEN, E. J., GILMONT, R., and ROSSINI, F. D. Heats of combustion of benzene, toluene, ethyl-benzene, *o*-xylene, *m*-xylene, *p*-xylene, *n*-propylbenzene, and styrene, 1497
ROSEN, E. J., JESSUP, R. S., and ROSSINI, F. D. Heat of formation of carbon dioxide and of the transition of graphite into diamond, 1494
ROSEN, E. J., PITZER, K. S., and ROSSINI, F. D. Free energies and equilibria of isomerization of the 18 octanes, 1503; Heats and free energies of formation of the paraffin hydrocarbons, in the gaseous state, to 1 500° K, 1810
ROSEN, E. J., and ROSSINI, F. D. Heats of combustion of eight normal paraffin hydrocarbons in the liquid state, 964; Heats of formation and combustion of 1,3-butadiene and styrene, 1495; Some experimental data on the heats of combustion of benzoic acid and carbon (graphite), 1496; Heats of combustion and formation of the paraffin hydrocarbons at 25° C, 1498; Heats of isomerization of the 18 octanes, 1499
PROSEN, E. J. *See also* JOHNSON, W. H.
PROUDMAN, J. The tides of the Atlantic Ocean, 1674
PROUT, E. G., and TOMPKINS, F. C. The thermal decomposition of potassium permanganate, 343
PRUTTON, A. J. *See* BARTON, C. J.
PRYCE, J. M. *See* DAVIES, D. S.
PRYOR, M. J. An apparatus for demonstrating standing waves, 2198
PUDDINGTON, I. E. *See* GALLAY, W.
PUGH, H. L. D. A falling co-axial cylinder viscometer for the rapid measurement of high viscosities, 120
PURVES, C. B. *See* HEIDT, L. J.

QUAYLE, O. R., DAY, R. A., and BROWN, G. M. A study of organic parachors. VII. A series of saturated hydrocarbons, 371
QUAYLE, O. R., and SMART, K. O. A study of organic parachors. VI. A Supplementary series of tertiary alcohols, 371
QUAYLE, O. R. *See also* SMART, K. O.
QUENSEL, P. Berylliumorthite (muromontite) from Skuleboda felspar cleavage, 3131
DE QUERVAIN, M. X-ray investigations with potassium phosphate at low temperatures, 3130
QUIGLEY, T. H. An experimental determination of the velocity of sound in dry CO_2-free air and methane at temperatures below the ice point, 1743
QUILL, J. S. Measuring arc duration, 856

RABINOWITCH, E. Spectra of porphyrins and chlorophyll, 2907
RADO, T. On surface area, 2087
RAHMAN, S. F., and MUHI, F. Electrical properties of Indian soils at medium broadcast frequencies, 716
RAINE, H. C., RICHARDS, R. B., and RYDER, H. The heat capacity, heat of solution, and crystallinity of polythene, 1490
RAINFORD, H. Flameproof enclosure of electrical apparatus, 1804
RAMACHANDRAN, G. N. A new derivation of the Darwin-Prins formula of X-ray reflection, 610; The angular divergence of the X-ray reflections by diamond, 2308; *see also* KRISHNAN, R. S.
RAMAN, C. V. Scattering of light in crystals, 2562; Allotropic modifications of diamond, 3133
RAMANADHAM, R., and RAO, K. R. Investigations on the spectrum of bromine. II. Structure of Br II, 2898
RAMANATHAN, K. G. Some applications of Ramanujan's trigonometrical sum $C_m(n)$, 7; Infra-red spectrum of diamond, 3134
RÅNBY, B. *See* HAMBRAEUS, G.
RAND, G. *See* HARDY, L. H.
RANDALL, H. M. *See* OETJEN, R. A.
RANDS, R. D., JR., FERGUSON, W. J., and PRATHER, J. L. Specific heat and increases of entropy and enthalpy of the synthetic rubber GR-S from 0° to 330°K, 221
RANDS, R. D., JR. *See also* SCOTT, R. B.
RANKIN, J. J. *See* HAVENHILL, R. S.
RANKIN, R. A. On the representation of a number as a sum of squares and certain related identities, 1606
RAO, B. P. Raman effect in aqueous solutions of some inorganic gases, 1428
RAO, B. R. Elastic constants of quartz, 2404
RAO, B. S. M., VENKATACHALIENGAR, K., and THIRUVENKATACHAR, V. R. Algebra related to particles of spin $\frac{3}{2}$, 2747
RAO, C. R. *See* BOSE, R. C.
RAO, C. R. K. Familial correlations or the multivariate generalizations of the intraclass correlation, 2106
RAO, C. V. H. On a theorem on the plane cubic, 27; On a problem in solid geometry, 2086
RAO, G. G., and RAO, V. M. Photochemical analysis. Estimation of ferric salts, 2485
RAO, G. S. V. R. *See* RAO, K. R.
RAO, I. R., and RAO, N. R. Influence of temperature on the Raman bands of H_2O, D_2O and HDO, 573
RAO, K. R., and RAO, G. S. V. R. New bands of the Hg Br molecule, 1402; The ultra-violet bands of HgCl, 1403; A new band system of the HgBr molecule, 2901
RAO, K. R., SASTRY, M. G., and KRISHNAMURTY, V. G. Ultra-violet band systems of the HgI molecule, 2241

RAO, K. R. *See also* RAMANADHAM, R.
RAO, M. R. Elastic behaviour of metals near the melting point, 1028
RAO, M. R. A. N. The effect of electric field on the depolarization of light scattering in colloidal systems, 2299
RAO, N. R. Molecular association in oxyacids, 519; Study of electrolytic dissociation in strong electrolytes by Raman effect, 679; Influence of common ion on the dissociation of some electrolytes. I. Sulphuric acid and bisulphates, 1079; *see also* RAO, I. R.
RAO, P. V. *See* KRISHNAN, R. S.
RAO, S. R. Magnetism of germanium, 1895
RAO, V. M. *See* RAO, G. G.
RASETTI, F. *See* FEENY, H.
RASHEVSKY, N. A contribution to the mathematical biophysics of visual aesthetics, 1594; A problem in the mathematical biophysics of blood circulation. I, 2054; II. Relation between pressure and flow of a viscous fluid in an elastic distensible tube, 2055; Outline of a mathematical approach to the cancer problem, 2641
RASHEVSKY, N., and BROWN, V. A contribution to the mathematical biophysics of visual perception and aesthetics, 740; Contributions to the mathematical biophysics of visual aesthetics, 1593
RATH, H., KEPPLER, D., and ROESLING, I. Enzymic splitting of starch and the evaluation of desizing materials, 1162
RAVENSCROFT, P. H., LEWIS, R. W., and BROWN, O. W. The electrolytic reduction of *p*-nitrobenzoic acid to *p*-aminobenzoic acid, 690
RAY, K., and SENGUPTA, N. D. Ultimate vacuum attainable by a diffusion pump, 2826
RAY, W. A. *See* JONES, G.
RAYCHAUDHURI, S. P., and DATTA, N. B. Comparison of the properties of freshly precipitated and heated aluminosilicates and alumina and silica gels and of clay minerals, 2500
RAYNOR, E. J. *See* LINNETT, J. W.
RAYNOR, G. V. *See* LITTLE, A. T.
RE, J. J. Statistical data concerning parasitic resistances of aircraft, 1317
READ, J. *See* GRAY, L. H.
REAMER, H. H., OLDS, R. H., SAGE, B. H., and LACEY, W. N. Phase equilibria in hydrocarbon systems, 1041
REBER, G. Cosmic static, 2112
REDIES, M. F., and IREDALE, T. The kinetics of the reaction between silver perchlorate and methyl iodide, 345
REDLICH, O., and FRIEDMAN, I. I. Raman spectrum of the deuterohydroxylammonium ion, 2942
REDLICH, O., and SCHUTZ, P. W. On the thermodynamics of azeotropic solutions. I. Shift of equilibrium in binary systems, 229
REED, I. S. On the solution of a general transform, 786
REEKIE, J., and AIRD, J. Flow of water through very narrow channels and attempts to measure thermomechanical effects in water, 2789
REES, A. L. G. *See* HALL, M. N. A.
REES, W. H. Some experiments on the evaporation of water from a plane surface, 2979
REHBERG, C. E. *See* FISHER, C. H.; MAST, W. C.
REHM, W. S. An easily constructed Hepp osmometer, 877
REHNER, J., JR. *See* FLORY, P. J.
REICHENBÄCHER, E. Generation of the gravitational field, 1691
REICHERT, J. S., CAMPBELL, D. J., and SECORD, R. A. Bleaching of mechanical pulps. Effect of varying the conditions in bleaching with sodium peroxide, 1160; Sodium-peroxide bleaching of mechanical pulps, 1161
REID, J. D. *See* DRYDEN, E. C.
REID, J. F. Relationship of ink to paper, 326
REID, W. T. *See* COHEN, P.
REILLY, J. *See* AHERNE, J. C.
REINER, J. M., and SPIEGELMAN, S. The energetics of transient and steady states, with special reference to biological systems, 2771
REINER, M. A classification of rheological properties, 2428
REINHARDT, H. Brightness units, 555
REISS, M. $\cos^4$ law of illumination, 1369
REISSNER, E. Note on the theorem of the symmetry of the stress tensor, 1989; On the theory of bending of elastic plates, 2007; The effect of transverse shear deformation on the bending of elastic plates, 3086
REISSNER, E., and SAGOCI, H. F. Forced torsional oscillations of an elastic half-space. I–II, 528
REITEMEIER, R. F. A centrifuge tube agitator, 2495
REITZ, H. C., FERREL, R. E., and OLCOTT, H. S. Gel-forming derivative of wheat gluten, 2499
REIZ, A. On the numerical solution of certain types of integral equations, 66
RENNIE, E. J. C. Thermodynamics of the gas turbine, 972
REUTER, M. A. *See* STIMSON, M. M.
REUYL, D. *See* VYSSOTSKY, A. N.
REYERSON, L. H., and OPPENHEIMER, H. The catalytic oxidation of ethylene to ethylene oxide, 1076
REYNOLDS, C. B. The rotation of electrolytes under the influence of a magnetic field, 1915; The action of a magnetic field on ferric hydroxide, 1919; *see also* KANE, G.
REYNOLDS, D. H., and RICH, J. A. Examination of resin-treated fibres with the electron microscope, 1974
REYNOLDS, D. S. *See* HILL, W. L.
RICCI, J. E. The systems $NaClO_3$-NaBr-H_2O, $NaClO_3$-NaI-H_2O and $NaClO_3$-$NaNO_3$-H_2O, at 25° C, 334
RICCI, J. E., and ALESHNICK, J. J. The ternary system silver-bromate–sodium-bromate–water, 331
RICCI, J. E., and SMILEY, S. H. The ternary system barium-bromate–barium-chlorate–water at 25°, 333
RICE, O. K. On the statistical mechanics of liquids, and the gas of hard elastic spheres, 1244; *see also* HADEN, W. L., JR.
RICE, S.O. Sums of series of the form $\sum_n a_n J_{n+\alpha(z)} J_{n+\beta(z)}$, 782
RICH, G. R. Water-hammer analysis by the Laplace-Mellin transformation, 2787
RICH, J. A. *See* REYNOLDS, D. H.
RICHARDS, A. R., and HARGREAVES, E. Vapour-liquid equilibria of close-boiling binary hydrocarbon mixtures, 1042
RICHARDS, L. A., and WEAVER, L. R. The sorption-block soil-moisture meter and hysteresis effects related to its operation, 1146
RICHARDS, O. W. Phase-difference microscopy, 1374
RICHARDS, R. B. The melting of polythene, 1472; *see also* RAINE, H. C.
RICHARDS, R. E., and THOMPSON, H. W. An absorption cell for molten solids and heated liquids, 1387
RICHARDSON, L. F. Stability after the war, 77; Distribution of wars in time, 2690
RICHER, G. C. The magnetization of polycrystalline iron and iron-silicon alloys, 274
RICHTER, C. P., WOODRUFF, B. G., and EATON, B. C. Hand and foot patterns of low electrical skin resistance: their anatomical and neurological significance, 245
RICKER, N. Wavelet functions and their polynomials, 399
RIDEAL, E. K., INGOLD, C. K. The application of infra-red spectra to chemical problems. A general discussion, 1395
RIDEAL, E. K. *See also* ALEXANDER, A. E.; HERINGTON, E. F. G.
RIEGGER, E., TARTAR, H. V., and LINGAFELTER, E. C. Equilibria between hydrogen sulphide and aqueous solutions of monoethanolamine at 25°, 45°, and 60°, 1563
RIES, H. E., JR., VAN NORDSTRAND, R. A., and TETER, J. W. Surface area of catalysts, 3097
RIESS, K. Electromagnetic waves in a bent pipe of rectangular cross section, 1909
RIGDEN, P. J. *See* LEE, A. R.
RIGGIN, J. D. *See* ELDER, F. K.
RILEY, D. P. *See* LIPSON, H.; NELSON, J. B.
RILEY, R. V. *See* HURST, J. E.
RITCHIE, P. D., and KIRKWOOD, I. W. A. Water-resistant films of plastic materials, 2387
RITTER, H. L. *See* SIMONS, J. H.
RITTLER, M. C. *See* HARDY, L. H.
ROBBIE, W. A., and LEINFELDER, P. J. A manometric apparatus for respiratory studies of small animals, 1699
ROBERTS, E. A. O'D. *See* OWEN, E. A.

OBERTS, E. J. *See* BURNETT, R. S.
OBERTS, H. D. The moisture content distribution in wood used as a partition between water and air, 2642
OBERTS, J. E. Absorption of radium (B + C) gamma-rays, 1958
OBERTS, W. O. A preliminary report on chromospheric spicules of extremely short lifetime, 2700
OBERTSON, A. E. *See* MCARDLE, E. H.
OBERTSON, B. P. *See* BOYD, J.
OBERTSON, G. R. Combined manometer-barometer for distillation, 2166
OBERTSON, I. A. An historical note on a paradox in electrodynamics, 1904
OBERTSON, J. M., and WHITE, J. G. Crystal structure of coronene, 708
OBERTSON, W. W. *See* MATSEN, F. A.
OBINSON, H. A., and PETERSON, C. A. Viscosity of recent container glass, 1708
OBINSON, R. A. *See* STOKES, R. H.
OCARD, Y., and VERON, M. Generalization of the theory of calorific convection. The concept of active convection. Technical consequences. I, 2271
OCHESTER, G. D. Cloud-chamber photographs of penetrating showers, 268; *see also* JÁNOSSY, L.
OCK, S. M. *See* WASHBURN, H. W.
ODGERS, L. M. *See* SMITH, D. B.
ODRIGUEZ, A. E., and BALSEIRO, J. A. The absorption spectrum of blood plasma and its stability with various agents, 907
OEBUCK, J. R. A novel form of refrigeration, 2288
OESLING, I. *See* RATH, H.
OESS, L. C., and DACUS, E. N. The design and construction of rapid-response thermocouples for use as radiation detectors in infra-red spectrographs, 3018
OESS, L. C. *See also* DACUS, E. N.; ELKIN, P. B.
OESTI, H. Dyeing properties of wool which has been exposed to light, 2021
OGERS, E. R. *See* LIPSON, H.
OGERS, F. T., JR. *See* HORTON, C. W.
OGOZINSKI, A. *See* AUGER, P.
OHNER, M. *See* STAMBAUGH, R. B.
OLLER, P. S., and STODDARD, C. K. Viscosity and rigidity of structural suspensions, 862
OMANOFF, A. L., and HALL, G. O. Influence of temperature on changes in storage eggs as measured by radio-frequency conductivity, 606
OMANOFF, M. Effect of aeration on hydrogen-ion concentration of soils in relation to identification of corrosive soils, 2476
OMBERG, J. W. *See* TRAXLER, R. N.
OOD, P. "Action equals reaction"—even in gyroscopes, 2756
OOKSBY, H. P. *See* BROWN, K. W.; PETCH, N. J.
OONEY, T. E. *See* SLOMAN, H. A.
OONEY, W. J. Summary of earth-current records from Tucson, Arizona, for a complete sunspot cycle, 715
OSE, F. C. Logarithmic scales, 2825
OSE, M. E. On the absorption of the hard component of the cosmic radiation, 989
OSEBERRY, H. H., and SMITH, W. C. The Rayleigh disc as a laboratory instrument, 540
OSENBLATT, A. On the movement of a cosmic cloud, 795
OSENBLUM, S., and WALEN, R. Making very thin vacuum-tight glass windows, 2823
OSENBLUM, S. *See also* CHANG, W. Y.
OSENFELD, L. Friction of ball and roller bearings, 502
OSER, F. X. On the temperature effect in cosmic radiation, 2346
OSS, J. *See* MILES, G. D.
OSS, S. The change of surface tension with time. I. Theories of diffusion to the surface, 2796; *see also* BRADY, A. P.
OSSIER, P. On the geometry of spheres and circles, and the definition of the plane and the straight line, 23
OSSINI, F. D. *See* JOHNSON, W. H.; PROSEN, E. J.; TAYLOR, W. J.; WAGMAN, D. D.; WILLINGHAM, C. B.
OTH, F. L., and WOOD, L. A. Some relations between stress, strain, and temperature in a pure-gum vulcanizate of GR-S synthetic rubber, 1994
OTH, F. L. *See also* WOOD, L. A.
OTHEN, A. The ellipsometer, an apparatus to measure thicknesses of thin surface films, 1433
OUAULT, M. Contribution to the study of molecular structures by electron diffraction, 3073
OUSSEL, A. On certain arithmetic applications of the theory of residues, 440
OWLAND, B. W., and HARRISON, J. J. Alumina content of rosin-free handsheets in relation to tub sizing, 1977
OWLAND, W. M., and SLOAN, L. L. The relative merits of red and white light of low intensity for adapting the eyes to darkness, 931
OY, R. R. *See* KAR, K. C.
OY, S. K. A case of polytropic equilibrium configuration with variable angular velocity, 80; Amplitude effect in Cepheid variables, 1665; On the anharmonic pulsations in the pulsation theory of the Cepheid variable, 2122
OZENTAL, D., and CAMPBELL, H. C. Rapid photometric determination of silicon in low alloy and stainless steels, 2220
UBIN, L. C. *See* BENEDICT, M.
UCHHOFT, C. C., and MECKLER, W. G. Coloured TNT derivative and alpha-TNT in coloured aqueous alpha-TNT solutions. Spectrophotometric procedure for quantitative estimation, 2867
UDBERG, H. A relation between different methods of summation, 1617
UDMANN, K. A contribution to the calculation of arches which are rigidly fixed on each side and which are curved in ground plan, 1254
UEDY, R. Transmission of light by water drops 1 to 5μ in diameter, 580; Undercooling and rate of condensation in steam, 871
ULE, K. C. The X-ray *K*-absorption edge for sodium and the secondary structure accompanying the edge for the sodium halides, 984
UNDLE, R. E. The van der Waals constant "*a*" from C_p/C_v measurements, 888
UNDLE, R. E., FOSTER, J. F., and BALDWIN, R. R. On the nature of the starch-iodine complex, 1573
UNGE, R. A theory of photosensitivity of some lower animals, 2640
USE, H. S. On the line geometry of the Riemann tensor, 34
USHBROOKE, G. S. *See* WYNNE-JONES, W. F. K.
USHTON, E. Dielectric properties of a thermoplastic *m*-cresol resin in relation to Garton's hypothesis, 236
USHTON, J. H. *See* MILLER, F. D.
USOFF, I. I., PLATT, J. R., KLEVENS, H. B., and BURR, G. O. Extreme ultra-violet absorption spectra of the fatty acids, 2916
USOFF, I. I. *See also* BARNES, R. H.
USSELL, H. D. *See* VAN HOOK, A.
USSELL, H. N. Provisional elements of the eclipsing binary V 444 Cygni, 815
USSELL, H. N., MOORE, C. E., and WEEKS, D. W. The arc spectrum of iron (Fe I). I. Analysis of the spectrum. II. The Zeeman effect, 1392
USSELL, R. R., and VANDERWERF, C. A. A combination gas-delivery tube and stirrer, 2527
UTHERFORD, D. E. On substitutional equations, 1184
YDBECK, O. E. H. A theoretical survey of the possibilities of determining the distribution of the free-electrons in the upper atmosphere, 2037
YDER, H. *See* RAINE, H. C.
YMER, T. B., and BUTLER, C. C. An electrical circuit for harmonic analysis and other calculations, 437
VAN RYSSELBERGHE, P., and ALKIRE, G. J. Polarographic reduction of carbon dioxide, 1129
VAN RYSSELBERGHE, P., and FRISTOM, R. M. The conductance of non-aqueous solutions of magnesium and calcium perchlorates, 3105
VAN RYSSELBERGHE, P., and HUNT, G. J. The conductance of solutions of magnesium perchlorate in *n*- and *iso*-propyl alcohols, 1088
YZNAR, J. W. Preparation and purification of hydrous oxide sols by ion exchangers, 1111

SABINE, P. E. Acoustical amplification by hearing-aids, 544
SAEMAN, J. F. Kinetics of wood saccharification. Hydrolysis of cellulose and decomposition of sugars in dilute acid at high temperature, 2448

SAFFER, A., and DAVIS, T. W. Reaction of methylene chloride and other halide vapours with sodium, 3092
SAGASTUME BERRA, A. E. On the theory of rings, 455
SAGE, B. H. *See* REAMER, H. H.
SAGENKAHN, M. L. *See* ASTON, J. G.
SAGOCI, H. F. *See* REISSNER, E.
SAHA, M. N. On a physical theory of the solar corona, 464
SAHADE, J., and CESCO, C. U. The spectroscopic orbit of AR Monocerotis, 2128; The spectroscopic orbit of AU Monocerotis, 2714
SAHADE, J. *See also* CESCO, C. U.; STRUVE, O.
SAHAY, B. K. The light-effect under electric discharge: the probability of recombination, 2306; Rupture of water drops over liquid surfaces, 2800
SAIBEL, E. A modified treatment of the iterative method, 426; A rapid method of inversion of certain types of matrices, 427; A general method of approximation to the influence function of an elastic system, 892; On the method of collocation, 1198
SAKMANN, B. W. Electro-optical effect in colloids, 1434; Metallurgical transformations in metal surfaces under conditions of boundary lubrication, 2438; Electro-optical properties of colloids. II, 2493
SAKSENA, B. D. The thermal expansion of diamond, 583; Piezo-electric constants of crystals—group-theoretical treatment, 1833
SALA, O., and WATAGHIN, G. Showers of penetrating particles, 1882
SALLEY, D. J. *See* PFANN, H. F.
SALTONSTALL, R. B. Thickness measurements of electro-deposited metals, 854
SALVATORI, H. Early reflection seismograph exploration in California, 2618
SALVEKAR, P. M. Minimum size of a sample, 2104
SALZER, H. E. Table of coefficients for inverse interpolation with advancing differences, 15; Coefficients for mid-interval numerical integration with central differences, 2672; *see also* LOWAN, A. N.
SAMSEL, R. W. *See* COCHRAN, D.
SAMUEL, R. Molecular constants and chemical theories. III. Bond moments of higher valence states, 372, 2514; *see also* GARDNER, T. S.
SAMUELS, J. O. Flocculation and flotation principles in the recovery of low-grade fuels, 1723
SÄNDSTROM, A. E. Further notes on the *K*-absorption spectrum of magnesium, 1512
SANDSTRÖM, J. W. Monthly mean surface temperatures of the sea, 726
SANFORD, R. F. Interstellar sodium lines in stars of classes R and N, 457; The spectrum of Nova Cygni 1942, 469; *see also* HUMASON, M. L.; MERRILL, P. W.
SANSOM, G. S. *See* ARCHENHOLD, G. H.
SANYAL, S. B. *See* SIRKAR, S. C.
SARABHAI, V. Banded meson spectrum and the Rossi second maximum, 270
SARJANT, R. J. *See* JACKSON, R.
SARNA, H. R., and SHARMA, O. P. Changes in the *B*/*H* curves of iron on sending direct electrical current through the specimen during magnetization, 1903
SASTRY, M. G. *See* RAO, K. R.
SATTERLEE, H. S., and BLODGETT, G. Ultra-micro-determination of arsenic by Gutzeit spot-filtration under vacuum, 165
SATTERLY, J. The application of the barometer in physics and chemistry, 524; Ball pendulum impact experiments, 2759
SAUER, E., and GELDMACHER, G. On the sizing of acetate silk with linseed emulsions, 2069
SAUER, J. A., SCHWERTZ, F. A., and WORF, D. L. Relative temperature stability of stressed plastics, 3144
SAUKA, J. *See* STRAUMANIS, M.
SAUNDERS, J. B. Interferometer measurements on the expansion of iron, 185
SAUNDERSON, J. L., and MILNER, B. I. Modified chromatic value colour space, 1442
SAVIĆ, P., and GARTON, C. G. Dipolar properties of resins (application of Fröhlich's and Garton's theories), 235
SAWYER, F. G., and OTHMER, D. F. Adsorption of solvent vapours on commercial activated carbon, 1117
SAWYER, W. M. *See* HUGHES, E. W.
SAWYER, W. W. A property of certain differential equations, 61
SAXBY, F. R. Unification of the physical fields, 2141
SAXENA, R. C. *See* AIYA, S. V. C.; BHABHA, H. J.
SCATCHARD, G., ONCLEY, J. L., WILLIAMS, J. W., and BROWN, A. Size distribution in gelatin solutions. Preliminary report, 1104
SCHAEFER, H. Fundamental problems of modern electrophysiology, 1505
SCHAEFER, V. J. *See* LANGMUIR, I.
SCHAEFGEN, J. R., NEWMAN, M. S., and VERHOEK, F. H. Ionization constants of butylamine, piperidine, and triethylamine in methanol, 1081
SCHAEFGEN, J. R., VERHOEK, F. H., and NEWMAN, M. S. Kinetics of the base-catalyzed reaction of pseudo-*l*-menthyl *l*-*o*-benzoylbenzoate with methanol, 2452
SCHÄFER, K. The coefficient of self-diffusion and the viscosity of monatomic liquids, 1279
SCHAFFEL, G. S. *See* STEMPEL, G. H., JR.
SCHARAWSKIJ, P. W. The temperature dependence of the resistance of selenium rectifiers, 248
SCHARFF-GOLDHABER, G., GOLDHABER, M., and YALOW, R. S. Attempt to detect nuclear resonance absorption of gamma-rays, 1954
SCHEELE, W., ALFEIS, M., and LAHAYE, L. On the rheometry of organic glasses. I, 668
SCHEELE, W., and STEINKE, L. The formation of synthetic resins from Schiff's bases. I. Resins from aromatic sulphonic acid amines and formaldehyde. II. Further investigations on the nature of sulphonamide resins, 2651
SCHEEN, W. L. *See* LEVERT, C.
SCHEIBEL, E. G., and JENNY, F. J. Representation of equilibrium constant data, 2447
SCHEIN, M. *See* AUGER, P.; *see* STROUD, W. G.
SCHEINBERG, H. *See* EDSALL, J. T.
SCHELKUNOFF, S. A. Proposed symbols for the modified cosine and exponential integrals, 1620
SCHERING, D. C. *See* BROER, L. J. F.
SCHERRER, P. *See* ZWICKER, B.
SCHILD, A. On Milne's theory of gravitation, 1233
SCHINK, N. F. *See* KERR, R. W.
SCHMELZLE, A. F., and WESTFALL, J. E. The relative viscosity of aqueous solutions of sulphamic acid and of some of its salts at 25°C, 116
SCHMIDT, G. M. J. *See* CROWFOOT, D.
SCHMIDT, K. Stability and aperiodicity of motion of the 4th order, 1628
SCHMITT, F. O., HALL, C. E., and JAKUS, M. A. Fine structure in the fibre-axis macroperiod of collagen fibrils, 1975
SCHMITT, F. O. *See also* HALL, C. E.
SCHNEIDER, A. *See* BARTLETT, P. D.
SCHNEIDER, E. E. Colour phenomena in ultra-violet vision, 1153
SCHNEIDER, W. C., CARTER, W. C., MAGAT, M., and SMYTH, C. P. Dielectric dispersion and absorption in Neoprene gum and tread stocks, 3010
SCHOFIELD, T. H. *See* SLOMAN, H. A.
SCHOMAKER, V. *See* DONOHUE, J.
SCHÖNBERG, A., and MUSTAFA, A. Photochemical reactions. VIII. Reaction of ethylenes with phenanthraquinone, 359
SCHÖNBERG, M. Classical theory of the point electron, 1822; The electron's self-energy, 1824; *see also* LOPES, J. L.; OCCHIALINI, G.
SCHOUTEN, J. The intensity ratios of the lines of the mercury triplet $\lambda = 5\,461$, $4\,358$ and $4\,047$ Å, 1401
SCHOUTEN, J., and SMIT, J. A. Measurement of the transition probabilities of mercury lines, 1400
SCHRAGE, H. K. Three-phase variable-speed drives for wind tunnel blowers, 887
SCHRÖDINGER, E. The affine connection in physical field theories, 86
SCHROEDER, W. *See* BOX, W. A.
SCHUCHOWITZKY, A. A. Surface tension of solutions, 2180
SCHULTZ, B. H. Note on the effect of a magnetic field on the torsion modulus of some paramagnetic metals, 1911
SCHULTZ, C. B., and STOUT, T. M. Pleistocene loess deposits of Nebraska, 2625
SCHULTZ, E. W., THOMASSEN, P. R., and MARTON, L. Observations on the structure of pyocyaneus bacteriophage, 2050

SCHULZ, LeR. G., and GOLDHABER, M. Capture cross section of hydrogen for slow neutrons, 1968
SCHUMACHER, E. F. *See* ERNST, R. C.
SCHUMACHER, H. The dyeing of spun yarn for cuprammonium and viscose rayons with direct dyes at low temperatures, 1163
SCHUMAN, R. P. *See* SHAFFER, W. H.
SCHUTTEVAER, J. W., DE BONT, M. J., and VAN DE BROEK, T. H. Determination of the relative transition probabilities of some triplet lines in the atomic spectra of calcium and strontium, 1398
SCHUTTEVAER, J. W., and SMIT, J. A. The relative probabilities of transactions in the zinc atom, 1397
SCHÜTZ, F. On the influence of weak electric currents and electrically charged surfaces on blood coagulation, 251
SCHUTZ, P. W. *See* REDLICH, O.
SCHWAB, F. W., and WICHERS, E. A physical method for determining residual water and other volatile materials in pure substances, 377; Freezing temperature of benzoic acid as a fixed point in thermometry, 1807
SCHWARTZ, H. Utilization of lignin in plastics, 754
SCHWARZER, H. A method for determining the potential of a uniform double layer, 2292
SCHWERTASSEK, K. Surface printing as an aid in the investigation of faults in textiles, 1970
SCHWERTZ, F. A. *See* SAUER, J. A.
SCHWEYER, H. E. *See* TRAXLER, R. N.
SCOTT, D. B. Point curve correspondences. I. The theory of the base, 2666
SCOTT, G. G. *See* KETTERING, C. F.
SCOTT, L. C. *See* SENEKJIE, H. A.
SCOTT, R. A. An investigation of the performance of the Rayleigh disc, 1343
SCOTT, R. B., FERGUSON, W. J., and BRICKWEDDE, F. G. Thermodynamic properties of *cis*-2-butene from 15° to 1 500° K, 209
SCOTT, R. B., and MELLORS, J. W. Specific heats of gaseous 1, 3-butadiene, isobutene, styrene, and ethylbenzene, 1488
SCOTT, R. B., MEYERS, C. H., RANDS, R. D., JR., BRICKWEDDE, F. G., and BEKKEDAHL, N. Thermodynamic properties of 1, 3-butadiene in the solid, liquid, and vapour states, 2974
SCOTT, R. L., and MAGAT, M. The thermodynamics of high-polymer solutions. I. The free energy of mixing of solvents and polymers of heterogeneous distribution. II. The solubility and fractionation of a polymer of heterogeneous distribution, 2287
SCOTT, R. M. Spectrophotometry of Mira Ceti, 2707
SCOTT, W. E. *See* FLEMING, J. A.
SCOVILL, W. E. *See* BURK, R. E.
SCRIBNER, B. W., and WILSON, W. K. Methods for the evaluation of analytical filter papers, 2531
SEABURY, R. L. *See* CLARK, G. L.
SEAGREN, G. W. *See* YOUNG, G. H.
SEAL, K. *See* PARTRIDGE, J. H.
SEARES, F. H. Regression lines and the functional relation, 2107
SEARES, F. H., and JOYNER, M. C. Relation between colour index and effective wavelength from the observations of Hertzsprung and Vanderlinden, 2131; Note on departures from black-body conditions in stars, 2719; Revised standards of colour index for polar stars, 2721
SEARLE, G. F. C. Experiments on the six focal lines due to reflections at the surfaces of two plano-cylindrical lenses, 167
SEARS, D. S. *See* LAUBENGAYER, A. W.
SEBAN, R. A., and LONDON, A. L. Experimental confirmation of predicted water-freezing rates, 1800
SECORD, R.-A. *See* REICHERT, J. S.
SECRIST, J. H., and BROCKWAY, L. O. The molecular structures of phosphoryltribromide thiophosphoryltribromide, thiophosphorylmonofluorodibromide, and thiophosphoryldifluoromonobromide, 998
SEDEFCIYAN, A. *See* WINTERSTEIN, H.
SEDERHOLM, P. *See* BENEDICKS, C.
SEELIGER, R. On the theory of cathode sputtering, 254
SEEMANN, H. The ruled surfaces of the space lattice interferences and their most important plane sections as single-crystal diagram curves, 2027
SEETHARAMAN, V. On the existence of a metric for higher space paths, 58
SEFTON, R. A calorimetric method for the determination of *cyclo*pentadiene, 2996
SEGAL, I. E. The span of the translations of a function in a Lebesgue space, 785
SEGRE, B. A remark on unicursal curves lying on the general quartic surface, 30
SEGRÈ, E. *See* WU, C. S.
SEIFERT, H. S. Minimum conditions necessary to achieve the velocity of escape, 1266
TEN SELDAM, C. A. *See* MICHELS, A.
SELIGMAN, A. M. Traumatic shock. III. A modified electroscope especially suited for measuring substances with low-energy radiation, 650
SELTZ, H. *See* SNYDER, P. E.
SEMMENS, C. S. *See* BHADURI, P. N.
SEMPLE, J. G. Properties of certain cubic primals, 39
SEN, B. Boundary-value problems of circular discs under body forces. I, II, 847, 1262; Direct determination of stresses from the stress equations in some two-dimensional problems of elasticity. IV. Problems of wedges, 1986; Stresses in an infinite plate due to isolated forces and couples acting near a circular hole, 3083
SEN, N. R. The concept of space in mathematics and natural philosophy, 22; Note on pressure relations within fluid spheres in equilibrium, 2118
SEN, N. R., and BURMAN, U. R. An approximate solar model on Bethe's law of energy generation, 2136
SEN, R. N. On parallelism in Riemannian space, 1191
SENEKJIE, H. A., and SCOTT, L. C. Studies on the microcataphoresis of animal parasites, 250
SEN GUPTA, A. K. The band spectrum of bismuth monoxide (BiO), 2238
SEN GUPTA, N. C. Fluid flow through porous media. III. Air permeability of consolidated sands partly saturated with water, 654
SENGUPTA, N. D. *See* RAY, K.
SEN GUPTA, R. L. Application of a randomly-operated large Wilson cloud chamber for the determination of the mass of the meson, 1539
SENIOR, K. L., HETRICK, R. R., and MILLER, J. G. Measurement of the rate of reaction of potassium iodide with organic chlorides in dilute acetone solution, 1066
SERENSEN, S. V. Conditions of failure and factors of safety in members subject to alternating stresses, 321
SERFASS, E. J., and MURACA, R. F. A high vacuum cut-off, 2822
SERVAIS, M. Analysis of complex X-rays by means of filters, 3034
SETLOW, R. B. *See* MARGENAU, H.
SEYER, W. F., and MANN, C. W. The vapour pressures of *cis*- and *trans*-decahydronaphthalene, 2272
SEYERT, C. K., and NASSAU, J. J. Star counts in the Andromeda nebula, 2716
SHABALDAS, C. G. *See* OBREIMOV, I. V.
SHAFFER, W. H. Degenerate modes of vibration and perturbations in polyatomic molecules, 2748
SHAFFER, W. H., and HERMAN, R. C. The tetrahedral X_2YZ_2 molecular model. I Classical vibration problem. II. Rotation-vibration energies, 1532
SHAFFER, W. H., and SCHUMAN, R. P. The infra-red spectra of bent XYZ molecules. I. Vibration-rotation energies, 1921
SHAH, S. M. A note on the maximum modulus of the derivative of an integral function, 1195
SHAJN, G. A. Some physical characteristics of the atmospheres of supergiants *c*B5–*c*A3, 1671
SHAJN, P. T. The study of selective absorption in the region of the rift of the Milky Way in Aquila, 1669
SHAND, W. C. *See* KOMAREWSKY, V. I.
SHAPIRO, H. *See* CALINGAERT, G.
SHAPLEY, H., and BOYCE, E. H. Indices to Harvard variable-star numbers and to published variable-star fields, 473
SHARMA, O. P. *See* SARNA, H. R.
SHARP, D. G., TAYLOR, S. R., MCLEAN, I. W., JR., BEARD, D., and BEARD, J. W. Electron microscopy of some animal viruses, 2049
SHASTRI, N. A. Some theorems in operational calculus, 1613
SHAW, B. T. *See* KELLEY, O. J.
SHAW, E. C. Barking wood with water, 2074
SHAW, T. M. The surface area of crystalline egg albumen, 108

SHAW, T. M., JANSEN, E. F., and LINEWEAVER, H. The dielectric properties of β-lactoglobulin in aqueous glycine solutions and in the liquid crystalline state, 1830
SHAXBY, J. H. A simple form of the Nagel anomaloscope, 925
SHEARD, C. Dark-adaptation: some physical, physiological, clinical and aeromedical considerations, 194
SHEARER, R. *See* BEEMAN, L. A.
SHEDLOVSKY, L. *See* MILES, G. D.
SHEEN, R. T., and WOODRUFF, E. B. Selective calcium softening for industrial water supplies, 2065
SHELTON, J. R., and WINN, H. Ageing of GR-S vulcanizates in air, oxygen and nitrogen, 663
SHELTON, J. R. *See also* WINN, H.
SHEN, S. T. *See* WU, T. Y.
SHEPPARD, N., and SUTHERLAND, G. B. B. M. Some infra-red studies on the vulcanization of rubber, 1396
SHEPPARD, S. E., and GEDDES, A. L. Amphipathic character of proteins and certain lyophile colloids as indicated by absorption spectra of dyes, 1423; Effect of solvents upon the absorption spectra of dyes. IV. Water as solvent: a common pattern. V. Water as solvent: quantitative examination of the dimerization hypothesis, 1578
SHEPPARD, S. E., and NEWSOME, P. T. Electrical anisotropy of xerogels of hydrophile colloids. II, 1834
SHERESHEFSKY, J. L., and WALL, A. A. Pure and mixed monolayers of dilauryl maleate and fumarate, 513
SHERIDAN, J. The metal-catalysed reaction between acetylene and hydrogen. I. Nickel catalysts, 350; II. Further experiments with nickel catalysts. III. Some effects of added substances on the reaction over nickel. IV. Reaction over platinum, 2463, 2464, 2465
SHERWOOD, W. T. *See* MCLEOD, J. H.
SHIELDS, D. *See* VAN HOOK, A.
SHIPLEY, R. E. *See* CRITTENDEN, E. C., JR.
SHLAER, S. *See* HECHT, S.
SHMUSHKEVITCH, I. *See* DAVYDOV, B.
SHNEIDEROV, A. J. Red shift in the anagalactic nebulae, 2133
SHOENBERG, D. *See* BAUCHWITZ, F. K.
SHOHAT, J. On Van der Pol's and related non-linear differential equations, 60
SHOMATE, C. H. High-temperature heat contents of magnesium nitrate, calcium nitrate and barium nitrate, 220; Ferrous and magnesium chromites. Specific heats at low temperatures, 960; Specific heats at low temperatures of $Al_2(SO_4)_3$, $Al_2(SO_4)_3 . 6H_2O$, $KAl(SO_4)_2$ and $KAl(SO_4)_2 . 12H_2O$, 2993; Low temperature specific heats of α-manganese and γ-manganese, 2994
SHOMATE, C. H., and KELLEY, K. K. The specific heats at low temperatures of nitrates of magnesium, calcium, barium, and aluminium, 959
SHOMATE, C. H., and NAYLOR, B. F. High-temperature heat contents of aluminium oxide, aluminium sulphate, potassium sulphate, ammonium sulphate and ammonium bisulphate, 1486
SHOMATE, C. H., and YOUNG, F. E. Heats of formation of solid and liquid $Mn(NO_3)_2 . 6H_2O$, 224
SHOOK, E. M., OLSON, R. W., and KERR, R. B. Combination of amplitude and frequency modulation for communication in seismograph exploration for petroleum reservoirs, 722
SHORT, L. N. *See* CRAIG, D. P.
SHOTTER, G. F. Meter and instrument jewels and pivots, 2315
SHRADER, J. E. The three-component accelerometer, 506; The bellows accelerometer, 507
SHUKLA, P. D. On the differentiability of monotone functions, 2670
SHULL, C. G. *See* ELKIN, P. B.
SIAS, F. R., and FISK, D. B. A unique moving-magnet ratio instrument, 949
SIAS, F. R., and WRIGHT, J. H. Damping cylinders for aircraft gyroscopes, 2844
SIDHU, S. S. *See* FILER, L. J., JR.
SIEGBAHN, K., and BOHR, E. The β+-spectrum of C", 1946
SIEGBAHN, K. *See also* INGELMAN, B.
SIEGBAHN, M. A new design for high-vacuum pump, 1736
SIEMINSKI, M. A., and HOTTE, G. H. The porosity of textile materials, 2388
SIGAMONY, A. The magnetic behaviour of a tektite, 277; The magnetic properties of tourmaline and epidote, 993; Magnetic behaviour of iron pyrites, 994; Magnetic properties of augite, 1894
SILBERSTEIN, L. Solution of the restricted problem of the random walk, 74; The accumulation of chance effects and the Gaussian frequency distribution, 75; Construction of groups of commutative functions, 1614
SILBERSTEIN, L., and MACADAM, D. L. The distribution of colour matchings around a colour centre, 1441
SILBERSTEIN, L., and TRIVELLI, A. P. H. Quantum theory of exposure tested extensively on photographic emulsions, 2486
DA SILVEIRA, M. Absorption of γ-rays emitted by Uranium I and its immediate descendants, 1951
SILVER, R. S. Entropy of saturated liquid-vapour mixtures, and Trouton's rule, 2286
SILVERMAN, D. C. *See* BLOUT, E. R.
SILVERMAN, L. Sulphamic acid as an aid in the analytical electro-deposition of copper, 2538
SILVERMAN, S. *See* BALLOU, J. W.
SILVERMAN, S. R. A clinical comparison of air- and bone-conduction hearing-aids in cases of conductive impairment of hearing, 548
SIMHA, R. The influence of molecular flexibility on the intrinsic viscosity, sedimentation, and diffusion of high polymers, 2168
SIMON, G. *See* DEUSCHLE, G.
SIMON, L. E. The industrial lot and its sampling implications, 452
SIMONS, J. H., and DRESDNER, R. D. The viscosity of hydrogen fluoride, 509
SIMONS, J. H., and FRYBURG, G. C. The elastic scattering and neutralization of low velocity hydrogen ions in methane, 2326
SIMONS, J. H., and POWELL, M. G. Properties of vanadium tetrachloride, 1465
SIMONS, J. H., and RITTER, H. L. An apparatus for the measurement of vapour densities, 2161
SIMONS, J. H., and UNGER, L. G. The elastic scattering and neutralization of low velocity hydrogen ions in ethylene and propylene, 2327
SIMONS, J. H. *See also* PEARLSON, W. H.
SIMPSON, D. M. The assignment of the vibrational frequencies, and the force field of the ozone molecule, 1407
SIMPSON, H. A certain multiple integral, 2671
SIMPSON, J. A., JR. Reduction of the natural insensitive time in G-M counters, 290
SIMPSON, S. F. Ultra-violet ionization of interrupter gaps in spectrographic spark sources, 1379; Ultra-violet irradiation of interrupter gaps in spectrographic spark sources, 1380
SIMPSON, W. Determination of molecular weights by the cryoscopic method, 521
SIMPSON, W. F. A simple volumeter, 2159
SINCLAIR, D. A. Intensity scales in spectrographic photometry, 1357
SINCLAIR, H. *See* TAYLOR, A.
SINGH, B., and DAS GUPTA, P. N. On reciprocal differences in two variables, 68
SINGH, B. N. On the variation of the high-frequency conductivity of an ionized medium with collision frequency, 975
SINGH, B. N., and GHOSE, S. On the experimental study of the effect of transverse h.f. electric field on the viscosity of liquids, 1276
SINGH, I. Adaptation or accommodation in unstriated muscle, 736; Similarities between the excitation phenomena in unstriated muscle and those in the retina, 738
SINGH, I., and SINGH, S. I. The effect of temperature and ions on the impedance of unstriated muscle and its relation to permeability and excitability, 737
SINGH, S. I. *See* SINGH, I.
SINHA, S. Infinite integrals involving generalized hypergeometric functions, 54
SINHA, S. P. Optically catalytic action of anthracene and phenanthrene in giving Raman shifts of some organic compounds, 574

RCAR, H. On the inequality satisfied by the derivative of order n of a function, 2669; On the integrals $\int_0^x J_k(x)dx$ and $\int_0^x J_{-k}(x)dx$, 2677

RKAR, S. C., and BISHUI, B. M. On the origin of extra spots in Laue photographs, 2576; Fluorescence of dipropyl ketone at low temperatures, 2939

RKAR, S. C., and SANYAL, S. B. Influence of temperature on the intensities of Raman lines due to some organic liquids, 575

SLER, H. H. *See* DAVIDSON, A. W.

KAU, E. L. *See* GRAFF, M. M.; WAKEHAM, H.

KOLIL, L. K. The average specific ionization of cosmic-ray mesotrons in hydrogen, 630

LACK, C. M., EHRKE, L. F., and ZAVALES, C. T. Millionth-of-a-second X-ray snapshots, 2656

LAUER, R. G. The confusion in brightness thinking, 2218

LAYMAKER, F. H. *See* MEEKER, W. F.

LEATOR, W. W. Pictures and images, 2228

LOAN, L. L. Eastman colour-temperature meter used as an anomaloscope, 934; *see also* ROWLAND, W. M.

LOAT, J. How *not* to find an oil field, 1140

LOCOMBE, R. *See* BREWSTER, R. Q.

LOMAN, H. A., ROONEY, T. E., and SCHOFIELD, T. H. A preliminary investigation of the constitution of mild-steel arc-weld deposits, 2544

MALLWOOD, H. M. Limiting law of the reinforcement of rubber, 1993

MART, K. O., and QUAYLE, O. R. A study of organic parachors. VIII. A supplementary series of tertiary chlorides, 2509

MART, K. O. *See also* QUAYLE, O. R.

MELLIE, R., JR. *See* KRIEBLE, V. K.

METHURST, P. C. The deposition of lead-sulphide mirrors on glass, 2269

MICK, A. E., and KIRKPATRICK, P. Absolute K-ionization cross-section of the nickel atom under electron bombardment at 70 kV, 1864

MILEY, S. H. *See* RICCI, J. E.

MIT, J. A. *See* SCHOUTEN, J.; SCHUTTEVAER, J. W.

MITH, A. W., DICKEY, F. P., and FOOR, S. W. The magnetic permeability of iron wires at radio-frequencies, 1897

MITH, B., and STRUVE, O. The radial velocity of the Pleiades, 2130

MITH, B. W. Modified pen-and-ink sizing test, 2645

MITH, C. G. The continuum at the mercury arc cathode, 1845

MITH, C. M., and GOODHUE, L. D. Increase in concentration of insecticide in Freon-12, 347

MITH, C. S., OLSEN, L. O., and CRITTENDEN, E. C., JR. The evaporation of metals from crucibles, 1474

MITH, C. S. *See also* OLSEN, L. O.

MITH, D. B., RODGERS, L. M., and TRAUB, E. H. Zeros of Bessel functions, 442

MITH, D. M., and LIDDIARD, E. A. G. Micro-densitometry in quantitative spectrographic analysis, 704

MITH, D. N. *See* BRYAN, J.

MITH, F. R., and KLEIBER, M. Apparatus for measuring rate of gas penetration through food-packaging materials, 1020

MITH, G. B. L. *See* HAHN, C.

MITH, G. S. The super-fluidity of liquid helium. II, 2985

MITH, G. W. The measurement of boundary tension by the pendent-drop method. II. Hydrocarbons, 127

MITH, H. A., ALDERMAN, D. M., NADIG, F. W., and PENNEKAMP, E. F. H. The catalytic hydrogenation of the benzene nucleus. I. The hydrogenation of phenyl-substituted aliphatic acids. II. The hydrogenation of benzene and monoalkylbenzenes. III. The hydrogenation of polymethylbenzenes, 2466

MITH, H. A., and BURN, J. Kinetics of the acid-catalysed esterification of phenyl- and *cyclo*hexyl-substituted aliphatic acids in methanol, 1057

MITH, J. J. The extension of the Heaviside expansion theorem to the equations of engineering and physics in curvilinear orthogonal co-ordinates, 1194

MITH, K. M. *See* LEA, D. E.

MITH, L. *See* GROETZINGER, G.

MITH, L. C., and HAMMETT, L. P. The acidity of buffered and unbuffered sulphuric acid solutions in nitromethane, 1574

SMITH, L. G. *See* KOMAREWSKY, V. I.

SMITH, L. T. *See* FISHER, C. H.; MAST, W. C.

SMITH, M. W. *See* BLOW, C. M.

SMITH, N. *See* SPEAKMAN, J. C.

SMITH, P. A. Permutable periodic transformations, 434

SMITH, R. C. M. *See* PANKHURST, K. G. A.

SMITH, R. E., and MORALES, M. F. On the theory of blood-tissue exchanges. I. Fundamental equations, 735; II. Applications, 2052; *see also* MORALES, M. F.

SMITH, T. On tracing rays through an optical system. V, 2873

SMITH, W. C. *See* ROSEBERRY, H. H.

SMITH, W. E., and MUDD, S. An unfamiliar pattern of bacteria morphology, 2045

SMITH, W. R., and WILKES, G. B. Thermal conductivity of carbon blacks, 1467

SMITHSON, F. *See* WHITTAKER, E. J. W.

SMOLUCHOWSKI, R. *See* HOFF, R. L.

SMORODINSKY, J. *See* GINSBURG, V.

SMYTH, C. P. *See* SCHNEIDER, W. C.

SMYTH, J. B., and LINDSAY, R. B. Supersonic transmission at oblique incidence through a solid plate in water, 534

SMYTHE, C. V. *See* FRUTON, J. S.

SNEDDON, I. N. The symmetrical vibrations of a thin elastic plate, 1739; The stress distribution due to a force in the interior of a semi-infinite elastic medium, 1998; *see also* HARDING, J. W.

SNELLMAN, O. Some measurements of magnetic double refraction, 636; Some observations on the method of measuring streaming double refraction, 2953

SNELLMAN, O., and WIDSTRÖM, G. Measurement of flow birefringence of some nucleic acids, 2954

SNOEK, A. P. *See* HOOGSCHAGEN, J.

SNYDER, P. E., and SELTZ, H. The heat of formation of aluminium oxide, 2998

SOBEL, A. E. Quantitative microchemistry in clinical laboratories, 2558

SOBOTKA, H., KANN, S., WINTERNITZ, W., and BRAND, E. The fluorescence of vitamin A. II. Ultraviolet absorption of irradiated vitamin A, 572

SÖDERQVIST, J. Spectra of highly ionized sodium and magnesium, 1764

SOKOLOW, A. *See* IWANENKO, D.

SOLLNER, K., and GREGOR, H. P. Membrane equilibria which involve only the ions of strong inorganic electrolytes, 2482

SOLOMON, E. *See* BENEDICT, M.

SOMERVILLE, J. L. *See* JAEGER, J. C.

SOMERVILLE, J. M. A chuck for glass tubing, 2528

SOMMER, A. The colour response of photoelectric cells, 2257; Visible glow discharge at very low potentials, 3024

SOOKNE, A. M., and HARRIS, M. Intrinsic viscosities and osmotic molecular weights of cellulose acetate fractions, 1705; Polymolecularity and mechanical properties of cellulose acetate, 2524

SOONAWALA, M. F. Thermal conductivity of water, 940; Energy in liquid state, 1817

SOROOS, H. *See* CALINGAERT, G.

SOUTHER, R. E. Application of mud analysis logging, 2614

SOUTHWELL, R. V. *See* ALLEN, D. N. DE G.

SOUTTER, P. The binding effect between pre-stressed and unstressed concrete and its application to a beam with pre-stressed support, 1259

DE SOUZA SANTOS, M. D. *See* MONTEUX, Y.; OCCHIALINI, G.; POMPEIA, P. A.

SOWERBY, J. MCG., Radio data charts, 18, 1634

SOWERBY, J. MCG., and WALTON, W. H. A rapid photo-electric optical distortion tester for plastic windows, 2411

SPACU, G., and POPPER, E. Refractometric investigations on three systems of aluminium nitrate and sodium-acetate, tartrate and citrate, 560

SPARING, W. H. *See* COPELAND, P.

SPARKES, S. R., and CORNFIELD, G. M. The buckling of the webs of plate girders, 2150

SPARROW, A. H. X-ray sensitivity changes in meiotic chromosomes and the nuclei acid cycle, 261

SPEAKMAN, J. B., CHAMBERLAIN, N. H., and MENKART, J. The lepidometer—an instrument for measuring the scaliness of animal fibres, 2383

SPEAKMAN, J. B. *See also* HIND, J. R.

SPEAKMAN, J. C., and SMITH, N. Acid salts of organic acids as *p*H-standards, 3104
SPEAR, F. G. The action of neutrons on bacteria, 298
SPEAR, F. G., and TANSLEY, K. The action of neutrons on the developing rat retina, 652
SPEISER, R., and WHITTENBERGER, R. T. Solute type and viscosity of dilute solutions of high polymers, 2777
SPENCE, K., and TOWNEND, D. T. A. The cool-flame and two-stage ignition systems in ether-air mixtures at room temperature, 2276
SPENCE, R. D. *See* WELLS, C. P.
SPENCER, D. E. The tensor representation of the figures of Study's "Geometrie der Dynamen," 33; Geometry of colour space, 924; A mathematical analysis of glare, 1779; *see also* MOON, P.
SPEYER, E. A calculation of Newton-ring tolerances for prism faces, 578
SPIEGELMAN, S. *See* REINER, J. M.
SPIEGLER, G. A simple compensating microphotometer, 2868
SPITZER, R. W. *See* GUTHRIE, G. B., JR.
SPONER, H. The near ultra-violet absorption of pyridine vapour, 2913
SPOONER, A. M. Photography of rolling steel balls, 974
SPRARAGEN, W., and CORDOVI, M. A. Shrinkage distortion in welding, 2400
SPROULL, R. L. An investigation of short-time thermionic emission from oxide-coated cathodes, 1872
SQUIRE, J. R. An instrument for measuring the quantity of blood at its degree of oxygenation in the web of the hand, 895
STADLER, J., and HARTMARK, B. Properties and testing of woollen articles containing "zellwolle," which have been treated for water resistance, 2061
STAIR, R. *See* COBLENTZ, W. W.
STAMBAUGH, R. B., ROHNER, M., and GEHMAN, S. D. Speed of retraction of rubber, 2003
STAMM, R. F. A fast grating spectrograph. Accessories and techniques for studying the Raman effect, 2890
STANDEN, G. W. Qualitative spectrographic analysis, 1377
STANSEL, F. R. Concurrent graduate study—its place in postwar engineering education, 1603
STANTON, H. E. The energy spectrum of electrons in the atmosphere arising from the disintegration of mesotrons, 269
STEACIE, E. W. R. *See* GUNNING, H. E.; LEROY, D. J.
STEARNS, E. I. *See* BUC, G. L.
STEBBING, E. P. Erosion and water supplies, 2623
STEBBINS, J. Six-colour photometry of stars. II. Light-curves of δ Cephei, 2708
STEBBINS, J., WHITFORD, A. E., and SWINGS, P. A strong infra-red radiation from molecular nitrogen in the night sky, 833, 3137
STEENROD, N. E. *See* EILENBERG, S.
STEEVES, T. A., and COOK, W. H. Reduction of spatial temperature variations in air-cooled cold storage rooms. I, 2988
STEINDLER, A. Locomotor mechanics and occupation, 2147
STEINKE, L. *See* SCHEELE, W.
STEINOUR, H. H. Rate of sedimentation. Suspensions of uniform-size angular particles, 1108; Rate of sedimentation. Concentrated flocculated suspensions of powders, 1109
STEMPEL, G. H., JR., and SCHAFFEL, G. S. A comparative study of the kinetics and mechanisms of formation of the phenylhydrazone, semicarbazone, and oxime of *d*-carvone, 673
STENE, S. A contribution to the theory of systematic extraction and other related convection problems, 2808
STENLID, G. *See* LUNDEGÄRDH, H.
STEPHENSON, C. C. The entropies of some aqueous ions, 969; *see also* HICKS, J. F. G.
STEPHENSON, C. C., and ADAMS, H. E. The heat capacity of ammonium dihydrogen arsenate from 15° to 300° K. The anomaly at the Curie temperature, 956; The heat capacity of silver trihydrogen paraperiodate from 15° to 300° K. The anomaly at the Curie temperature, 957
STEPHENSON, C. C., and HOOLEY, J. G. The heat capacity of potassium dihydrogen phosphate from 15° to 300° K. The anomaly at the Curie temperature, 953
STEPHENSON, C. C., and ZETTLEMOYER, A. C. The heat capacity of KH_2AsO_4 from 15° to 300° K. The anomaly at the Curie temperature, 954; The heat capacity of ammonium dihydrogen phosphate from 15° to 300° K. The anomaly at the Curie temperature, 955
STERBUTZEL, G. A. *See* BERL, E.
STETSON, H. T. Modern evidences for differential movement of certain points on the Earth's surface, 723
STEURER, E. Disintegration of cellulose, 303
STEVENSON, A. C. Tension of semi-infinite plate with notched boundary, 3082
STEWART, H. J. Periodic properties of the semi-permanent atmospheric pressure systems, 406; The aerodynamics of a ring airfoil, 1322
STEWART, R. W. *See* GALE, J. A.
STEWART, W. C., and WILEY, R. E. Physical properties of some national-emergency steels, 1034
STEWART, W. T. *See* LUCAS, H. J.
STILES, W. S. Current problems of visual research, 419
STILES, W. S., THOMSON, L. C., and PIRENNE, M. H. Colour vision of the fovea centralis, 2265
STILLE, U. The atomic constants e, e/m_0 and h, 2371
STILLINGS, R. A., and VAN NOSTRAND, R. J. The action of ultra-violet light upon cellulose. I. Irradiation effects. II. Post-irradiation effects, 362
STILWELL, W. H. *See* MCKELLAR, A.
STIMSON, H. F. The measurement of some thermal properties of water, 2975
STIMSON, M. M., and REUTER, M. A. The effect of *p*H on the spectra of thymine and thymine desoxyriboside, 2921
STOCKER, J. J. Plane problems of strain and the calculus of finite differences, 846
STOCKMAYER, W. H. Distribution of chain lengths and compositions in copolymers, 2519
STOCKMAYER, W. H., KAVANAGH, G. M., and MICKLEY, H. S. The thermodynamic properties of gaseous sulphur trioxide, 966
STODDARD, C. K. *See* ROLLER, P. S.
STODDART, E. M. The kinetics of the reaction between chlorine and nitric oxide, 346; The effect of drying on the vapour pressure of dinitrogen tetroxide and the vapour density of dinitrogen trioxide, 2980
STOENNER, R. *See* DAVIDSON, A. W.
STOKER, J. J. *See* FRIEDRICHS, K. O.; LUBKIN, S.
STOKES, A. R. Microdensitometry in X-ray crystallography, 712; *see also* MEGAW, H. D.
STOKES, J. M. *See* STOKES, R. H.
STOKES, R. H. A thermodynamic study of bivalent metal halides in aqueous solution. XI. The osmotic and activity coefficients of zinc iodide at 25°, 880
STOKES, R. H., STOKES, J. M., and ROBINSON, R. A. A thermodynamic study of bivalent metal halides in aqueous solution. X. The osmotic and activity coefficients of zinc bromide, 597
STOLL, A. M., WARD, P. A., and MATHIESON, D. R. The effect of ultra-violet radiation on cysts of endamoeba histolytica, 2857
STONE, L. *See* CIRCLE, S. J.
STONEHILL, H. I. Oxidation-reduction potentials: their significance and applications, 683
STONER, E. C. Magnetism in theory and practice, 273
STORCH, H. H. Catalysis in synthetic liquid-fuel processes, 3099
STOSICK, A. J. The X-ray investigation of copper *dl*-α-amino-butyrate, 2581; The crystal structure of nickel glycine dihydrate, 2582
STOUT, H. P. The kinetics of the electro-deposition of the azide ion, 2480
STOUT, T. M. *See* SCHULTZ, C. B.
STOY, R. H. Comparison stars for RS and Nova Puppis, 1663
STRAIT, A. L., KUMLER, W. D., and GOYAN, F. M. A simple adaptation of the ultra-violet photographic spectrophotometer to direct visual measurement, 557
STRAITIFF, W. G. *See* KEMP, A. R.
STRANDHAGEN, A. G. Use of sine transform for non-simply supported beams, 1996
STRANDSKOV, C. V. *See* WASHBURN, E. R.
STRAUMANIS, M., and SAUKA, J. The lattice constants and coefficients of expansion of iodine, 383
STROCK, L. W. Spectrochemical analysis of beryllium ores and commercial products, 2553

STRÖMBERG, G. The autonomous field, 1683
STROUD, W. G., and SCHEIN, M. The multiple production of mesotrons in paraffin at high altitudes, 1886
STRUTT, M. J. O., and VAN DER ZIEL, A. On the temperature variation of the dielectric losses of different types of glass in the short-wave region, 1507
STRUVE, O. An upper limit for the mass of the lunar atmosphere, 800; Radial velocities of twenty stars of early type in and near the galactic cluster NGC 6 231, 827; The spectra of the Cepheid variables, 1228; The Wolf–Rayet type spectroscopic binary HD 152 270, 2129; Spectrographic observations of the eclipsing variable AB Persei, 2713; Recent progress in the interpretation of stellar spectra, 2717; *see also* NEUBAUER, F. J.; SMITH, B.; SWINGS, P.
STRUVE, O., CESCO, C. U., and SAHADE, J. The spectroscopic orbit of BD Virginis, 812
STRUVE, O., and DEUTSCH, A. J. A change in the spectrum of 39ε Capricorni, 2132
STUART, M. C., and YARNALL, D. R. Fluid flow through two orifices in series. II, 122
STUECKELBERG, E. C. G. A new method for the quantization of fields, I. II. Quantum theory of non-charged fields. III. Classical and quantum theory of charged fields, 1230, 1231, 1232
STULTZ, K. F. *See* NICKERSON, D.
STURKEY, L., and FREVEL, L. K. Refraction effects in electron diffraction, 3042;
STURKEY, L. *See also* HEIDENREICH, R. D.
STÜSSI, F. The deformation problem for transversely loaded beams, 1247
SU, B. Note on a theorem of B. Segre, 32
SUCKSMITH, W. An improved magnetometer, 2351
SUEN, T. J., and YAO, F. H. Some Chinese clays as adsorbing agents, 3109
SUMNER, J. B. A method for the colorimetric determination of phosphorus, 1130
SUN, K. H. *See* HUGGINS, M. L.
SUPEK, I. The electrical conductivity of metals, 244
SURYANARAYANA, D. *See* BHAGAVANTAM, S.
SUSZ, B. P. Raman spectra of *cis* and *trans* 3-*ol*-1 hexene, 2943
SUTER, C. M., and ZOOK, H. D. The hydrolysis of trimethylethylene bromide. Mechanism of ketone formation, 335
SUTHERLAND, G. B. B. M., and THOMPSON, H. W. Developments in the technique of infra-red spectroscopy, 1385
SUTHERLAND, G. B. B. M., and WILLIS, H. A. Measurement of cell thickness, 1386; Some new peculiarities in the infra-red spectrum of diamond, 1419
SUTHERLAND, G. B. B. M. *See also* CANNON, C. G.; SHEPPARD, N.; THOMPSON, H. W.
SUTHERLAND, K. L. *See* PLANTE, E. C.
SUTTON, A. D. *See* PORITSKY, H.
SUTTON, L. E. *See* PHILLIPS, G. M.
SVENTITSKY, N. S. A universal source of excitation of spectra, 174
SVIRBELY, W. J. *See* LANDER, J. J.
SWAIN, C. G. The kinetic analysis of consecutive irreversible first-order reactions, 1064
SWAIN, M. L. *See* BRICE, B. A.
SWAN, B. G. Index of wells shot for velocity, 1141
SWANN, S., JR. The electrolytic reduction of amides. I. *N,N*-dimethylvaleramide and acetanilide, 687
SWANN, W. F. G. Variation of mesotron intensity with altitude and latitude, together with allied phenomena, and the bearing of these matters on the nature of the primary particles, 628; Certain applications of physical principles to the playing of musical instruments, 1742
SWARTZ, C. E. Motion of electrolytes in a magnetic field, 1916
SWEET, M. H. Direct-reading colour densitometer, 2654; A simple intensity scale sensitometer which conforms with American standard requirements, 3107
SWIFT, E., JR., and HOCHANDEL, H. P. The vapour pressure of trimethylamine from 0 to 40°, 2982
SWINEFORD, A., and FRYE, J. C. A mechanical analysis of wind-blown dust compared with analyses of loess, 2629
SWINGS, P. Molecules: their rôle in astronomy, 481; Doubly ionized rare earths in α^2 Canum Venaticorum, 823; *see also* KING, A. S.; STEBBINS, J.
SWINGS, P., and STRUVE, O. Spectrographic observations of peculiar stars. VII, 2720
SYNGE, J. L. On Herzberger's direct method in geometrical optics, 166; A geometrical interpretation of the relaxation method, 1635
SZASZ, G. J. *See* ASTON, J. G.
SZCZENIOWSKI, B. Flow of gas through a tube of constant cross-section with heat exchange through the tube walls, 1315
SZEGÖ, G. *See* HILLE, E.
SZPOR, S. Contribution to the problem of the concentration of the discharge channel, 1844; Electrical resistances of trees and their susceptibility to lightning, 2042
SZYMANOWSKI, W. T. Rapid determinations of elastic constants of glass and other transparent substances, 187

TABIN, J. Production of single mesotrons by non-ionizing radiation at altitudes of 10 600 ft. and 14 200 ft., 271
TABOR, D. *See* BOWDEN, F. P.
TAGG, G. F. Temperature compensation in indicating and recording instruments, 2277
TAI, L. C. Relationship between coercive force and carbon content of plain carbon steels, 275
TANG, T. Y. *See* CHAO, K. T.
TANSLEY, K. *See* GLUCKSMANN, A.; SPEAR, F. G.
TARTAR, H. V. *See* RIEGGER, E.
TASKER, H. S. Some properties and uses of X-ray intensifying screens, 3146
TATIUN, E. L. *See* GRAY, C. H.
TAWDE, N. R., and PATANKAR, V. S. Influence of air-gases on the first and second positive systems of nitrogen, 568
TAYLOR, A. On the optimum thickness of powder specimens in X-ray diffraction work, 655
TAYLOR, A., and SINCLAIR, H. The influence of absorption on the shapes and positions of lines in Debye–Scherrer powder photographs, 2579; On the determination of lattice parameters by the Debye–Scherrer method, 2580
TAYLOR, A. H. Measuring germicidal energy, 1354; *see also* LUCKIESH, M.
TAYLOR, E. W. The inverting eyepiece and its evolution, 2232
TAYLOR, J. H. On the determination of magnetic vertical intensity, *Z*, by means of surface integrals, 2602
TAYLOR, J. J. Statistical methods applied to insulator development and manufacture, 2101
TAYLOR, J. K. *See* BUCKLEY, F.
TAYLOR, P. K. A convenient virtual-image locator for elementary optics, 1367; A convenient virtual image locator for elementary optics, 2870
TAYLOR, S. R. *See* SHARP, D. G.
TAYLOR, W. J. Method of Lagrangian curvilinear interpolation, 2085; *see also* WAGMAN, D. D.
TAYLOR, W. J., PIGNOCCO, J. M., and ROSSINI, F. D. Method for calculating the properties of hydrocarbons and its application to the refractive indices, densities, and boiling points of the paraffin and mono-olefin hydrocarbons, 1761
TEA, P. L. Axipetal force and acceleration, 857
TEELE, R. P. Photometer for luminescent materials, 1753
TEKER, J. W. Measurements of railway motor temperatures in service, 2279
TELFAIR, D. *See* GAILUS, W. J.
TEMPERLEY, H. N. V. Contributions to the theory of co-operative phenomena, 639
TEMPLE, R. B. *See* THOMPSON, H. W.
TEMPLETON, D. H., DAVIES, D. D., with FELSING, W. A. The heat capacity of gaseous 1,3-butadiene from 0° to 100°, 1492
TERRACINI, A. The S_3's which are osculatory to the curves of a variety and a new characterization of a class of varieties, 43
TERZAGHI, K. Ends and means in soil mechanics, 1972
TETER, J. W. *See* RIES, H. E., JR.
TEVSADSE, G. A. Note on two new comets, 1659
THEBAULT, V. Spheres associated with a tetrahedron, 430
THIELSCH, H. Ion-migration phenomena observed with the electron microscope, 2019
THIRUVENKATACHAR, V. R. *See* RAO, B. S. M.

THODE, H. G., GRAHAM, R. L., and ZIEGLER, J. A. A mass spectrometer and the measurement of isotope exchange factors, 1937
THOMAS, B. O. A. Need for an instrument to measure *p*H in localized areas of the mouth, 743
THOMAS, C. L., and BLOCH, H. S. Hydrocarbon reactions in the presence of cracking catalysts. II. Hydrogen transfer. III. Cyclohexene, decalin and tetralin, 1070
THOMAS, C. L., and HOEKSTRA, J. Fluidized fixed bed, 3103
THOMAS, C. L., HOEKSTRA, J., and PINKSTON, J. T. Hydrocarbon reactions in the presence of cracking catalysts. IV. Removal of side chains from aromatics, 1071
THOMAS, E. L. The photopulse, 2842
THOMAS, G. B., and KING, G. W. Preparation of punched-card tables of logarithms, 1213
THOMAS, H. C. Heterogeneous ion exchange in a flowing system, 788
THOMAS, L. A. Terminology of interpenetrating twins in α-quartz, 2573
THOMAS, L. H. Note on Becker's theory of the shock front, 1336; Fluidity and molecular structure, 2172
THOMAS, T. Y. Surfaces of maximum shearing stress, 1988
THOMASSEN, P. R. *See* SCHULTZ, E. W.
THOMPSON, G. E. The slope deflection theory: derivation and application to simple frames, 2151
THOMPSON, H. W., and SUTHERLAND, G. B. B. M. The use of infra-red absorption in analysis. A. Introduction, 1417
THOMPSON, H. W., and TEMPLE, R. B. The infra-red spectra of furan and thiophen, 908
THOMPSON, H. W., and TORKINGTON, P. The infra-red spectra of compounds of high molecular weight, 1393; The infra-red spectrum of phenylacetylene, 1415; The vibrational spectra of acrylonitrile and perbunan, 1416
THOMPSON, H. W., and WHIFFEN, D. H. Sources of radiation and absorption cells, 1383
THOMPSON, H. W. *See also* RICHARDS, R. E.; SUTHERLAND, G. B. B. M.; TORKINGTON, P.; WHIFFEN, D. H.
THOMPSON, J. F. *See* ELLIS, G. H.
THOMPSON, S. *See* LAPITZKY, M. M.
THOMSON, G. Steric inhibition of resonance. I. The dichloronitrobenzenes. II. The *m*-xylidines and *N*-dimethyl-*m*-xylidines, 374
THOMSON, K. J. *See* FREUND, J.
THOMSON, L. C. *See* STILES, W. S.
THORNTON, B. M. Determining the thickness of linings of steel plate, 107; Testing the thickness of non-ferrous castings, 853; Checking the thickness of cylinders by electrical methods, 2156
THORNTON, V. *See* NIELSEN, J. R.
THORP, J. Significance of loess in classification of soils, 2633
THOSAR, B. V. Crystal luminescence—paramagnetic ions as centres, 913
THURBER, S. H. *See* HOLLOWAY, C., JR.
THURSTONE, L. L. Graphical method of factoring the correlation matrix, 19
TIEDEMAN, J. A. *See* ELDER, F. K.
TIFFANY, J. E. *See* GRANT, R. L.
TIFFIN, J. Vision and industrial production, 2263
TILTON, L. W. Refractive-index standards of fluorcrown glass, 2885
TIMOSHENKO, S. P. Theory of suspension bridges, 845; Theory of bending, torsion and buckling of thin-walled members of open cross section, 2752
TITCHMARSH, E. C. An extension of the Sturm-Liouville expansion, 49
TOBOLSKY, A. V. Equilibrium distribution in sizes for linear polymer molecules, 1122
TOBOLSKY, A. V., and ANDREWS, R. D. Systems manifesting superposed elastic and viscous behaviour, 2425
TODD, F. H. The fundamentals of ship form, 1718
TODD, J. A. The "odd" number six, 1648; Covariant line complexes of a pair of quadric surfaces, 2665
TOLANSKY, S. New contributions to interferometry, with applications to crystal studies, 2948
TOLBERT, B. M., BRANCH, G. E. K., and BERLENBACH, B. E. The absorption spectra of some N-phenyl-*p*, *p'*-diaminotriphenylmethane dyes, 2918
TOMKEIEFF, S. I. *See* WHITTAKER, E. J. W.
TOMLINSON, G. H. Magnesium bisulphite pulping process, 745
TOMPKINS, F. C. *See* PROUT, E. G.
TONG, L. K. J. *See* OLSON, A. R.
TONKS, L. Loss of weight by rotation, 1693
TOOL, A. Q. Relaxation of stresses in annealing glass, 2401
TORDAI, L. *See* WARD, A. F. H.
TORKINGTON, P., and THOMPSON, H. W. The infra-red spectra of fluorinated hydrocarbons. I, 1414; Solvents for use in the infra-red, 1424
TORKINGTON, P. *See also* THOMPSON, H. W.; WHIFFEN, D. H.
TOWNEND, D. T. A. *See* JONES, R. E.; SPENCE, K.
TOWNSEND, A. A. *See* BATCHELOR, G. K.
TOWNSEND, F. H. Unit for degree of vacuum, 2824
TOWNSLEY, M. G. Durability tester for coated optical elements, 2390
TRAUB, E. H. *See* SMITH, D. B.
TRAUTZ, M. The liquid state. I. Two-phase diagrams of internal friction, 1273
TRAVELLI, A. P. H. *See* SILBERSTEIN, L.
TRAXLER, R. N., SCHWEYER, H. E., and ROMBERG, J. W. Rheological properties of asphalt, 1036
TRELOAR, L. R. G. *See* FERRY, J.
TREW, V. C. G. *See* FRENCH, C. M.
TREYBAL, R. E. Ternary liquid equilibria predicted from binary vapour-liquid data, 1044
TRILLAT, J. J. On the photographic action of secondary electrons resulting from the action of X-rays on metals, 613
TRIPP, R. M. Analytical and experimental data concerning a solid hydrocarbon survey of the Fort Collins anticline, 418; Thermodynamics of a gas migrating vertically through the sedimentary column, 3002
TRISCHKA, J. W. Structure in the X-ray *K* absorption edges of solid potassium chloride, 3031
TRUEX, E. H., JR. The rehabilitation service for the hard of hearing at Deshon General Hospital, Butler, Pennsylvania, 741
TSAO, H. L. *See* WANG, K. C.
TSIEN, H. S. Symmetrical Joukowsky airfoils in shear flow, 146
TSIEN, L. C., and CHU, H. C. Harmonics in the piezoelectric oscillation of a quartz crystal, 3011
TUCKETT, R. F. Electrical and elastic properties of amorphous polar polymers, 234
TULLER, E. F., and EBLIN, L. P. Note on the relationship between time of dialysis and the Burton–Bishop rule, 2501
TUNELL, G. The two-circle goniometer in the X-ray laboratory, 2588
TUNNICLIFFE, E. J. X-rays and industrial diamonds. II, 713
TURKEVICH, J. Magnetic studies of chromium oxide catalysts, 276; Electron microscope studies of catalysts, 2015; *see also* KLINE, C. H., JR.; MCCARTHY, W. W.
TURNBULL, N. H. Absorption spectra of acridines. II. Monoaminoacridines, 2912
TURNER, L. B. *See* BALDWIN, F. P.
TURNER, W. E. S. *See* HALLE, R.
TUSKA, C. D. Historical notes on the determination of distance by timed radio waves, 486
TWEEDIE, M. C. K. Inverse statistical variates, 1645
TYSON, G. N., JR., and WILEY, J. W. The catalytic action of cupric ion on the oxidation of ascorbic acid in pyridine solution, 1074
TYTE, L. C. Temperature-indicating paints, 2987
TYTELL, A. A. *See* GRINER, A. M.

UBBELOHDE, A. R., and WOODWARD, I. Sub-crystalline changes of structure accompanying thermal transitions in Rochelle salt, and in potassium dihydrogen orthophosphate, 2563; Laue photographs of sub-crystalline regions in "hybrid" crystals of potassium dihydrogen phosphate, 3125
UBBINK, J. B., and DE HAAS, W. J. An apparatus to measure the specific thermal conductivity of gases at low temperatures, 1468; Thermal conductivity of gaseous helium, 1469
UEBERREITER, K. On the thermal behaviour of micro- and macro-molecular substances and its modifications, 1798

JHLER, H. S. First proof that the Mersenne number M_{157} is composite, 775

JHLICK, S. C. *See* KOMAREWSKY, V. I.

JHLIG, H. H. *See* HOFF, R. L.

JLBRICH, M. A. From edge to wedge lighting, 1365

JLLMAN, J. The probability of convergence of an iterative process of inverting a matrix, 428

JMSTÄTTER, H. Structural mechanics of highly elastic continua. VI. Viscosity and chemical constitution of micromolecular systems, 375. VII. Viscosity and chemical constitution of macromolecular systems, 1557

JNGER, L. G. *See* SIMONS, J. H.

JPADHYAYA, V. N. *See* GOGATE, D. V.

JRBACH, F. Note on specular densities and forward scattering, 918

JRBAIN, W. M. *See* KAUFFMAN, F. L.

'ACQUIER, V. The Gulf absolute magnetometer, 3065

'AIDYANATHASWAMY, R. The localization theory in set-topology, 44

'AISEY, G. *See* ALLEN, D. N. DE G.

'ALENTE, F. A. *See* ZAGOR, H. I.

'ALENZUELA, J. I. Earthquake-resisting structures, 2601

'ALLARTA, M. S. *See* BARAJAS, A.

'U VALLE, J. E. *See* WEISSBERGER, A.

'ALLELY, J. L. *See* MALAMPHY, M. C.

'AND, V. Theory of viscosity of concentrated suspensions, 2174; *see also* ARCHENHOLD, G. H.

'ANDENBELT, J. M., and DOUB, L. Characterization of the ultraviolet absorption spectra of some substituted benzene sulphonamides, 910

'ANDENBELT, J. M., FORSYTH, J., and GARRETT, A. Extinction coefficients of spectrophotometric standards as determined with the Beckman spectrophotometer, 2221

'ANDERWERF, C. A. *See* RUSSELL, R. R.

'ANDIVER, H. S. On trinomial congruences and Fermat's last theorem, 1179; Some theorems in finite field theory with applications to Fermat's last theorem, 1180; Fermat's quotient and related arithmetic functions, 1604; New types of relations in finite field theory, 1605; On the number of solutions of certain non-homogeneous trinomial equations in a finite field, 2662

'ANDONINCK, W. Measurement of the speed of propagation of sound in CO and D^2 as a function of the pressure at the temperatures of liquid oxygen and liquid hydrogen. The second virial coefficient of D^2, 1335; *see also* VAN ITTERBECK, A.

'ARADACHARI, P. S. *See* ANANTAKRISHNAN, S. V.

'ASHAKIDSE, M. A. An investigation of the polarization of the solar corona at the total eclipse of September 21, 1941, 1660

'AULOT, A. E. Application of three types of determinants to the calculation of the natural frequencies of coupled oscillating systems, 2663

'AVILOV, S. I. The theory of the influence of concentration on the fluorescence of solutions, 2936

'AZSONYI, A. A numerical method in the theory of vibrating bodies, 152

'ELLENGA, S. J. *See* GARRETT, A. B.

'ENEMA, A. *See* CLAY, J.

'ENKATACHALIENGAR, K. *See* RAO, B. S. M.

'ENKATESWARLU, P. *See* ASUNDI, R. K.

'ERDIECK, R. G. *See* WEHRMANN, R.

'ERHOEK, F. H. *See* SCHAEFGEN, J. R.

'ERNOTTE, P. Determination, by the condition of least error, of a formula, depending on linear parameters, for representing an experimental curve, 444; Representation of an experimental curve, in the general case, by the condition of least error, 445

'ERON, M. *See* ROCARD, Y.

'ERPOORTEN, I. *See* VAN ITTERBEEK, A.

'ERSTRAETE, E. O. K. The ion exchange with colloidal sulphur. II. Contribution to the knowledge of the ion exchange of lyophobe colloidal systems, 1110

'ESTINE, E. H. The geographic incidence of aurora and magnetic disturbance, northern hemisphere, 729

'ICKERSTAFF, T. The brightness of present-day dyes, 927; *see also* WHITE, G. S. J.

'ICKERY, R. C. The identification of the constituents of welding-electrode coatings, 1134

VIERHELLER, F., and BUENO, A. Contribution to the evaluation of the lattice constant by Debye-Scherrer's method, 396

VIGIER, J. P. Some results complementary to the theory of iteration of operators by M. Wavre, 1211

VILA, G. R. Plastication and processing of GR-S, 2430

VINCENT, J. F., and BRISTOL, K. E. Equilibrium humidity measurement, 2818

VINCENT, R. *See* COSTER, N. W.

VINOGRAD, J. R. *See* HUGHES, E. W.

VINTER HANSEN, J. M. The spectroscopic binary 31 Cygni, 817

VIVIAN, A. C. A renaissance of mechanical properties, 306; Fracture: its energy distribution and specific energy, 318; An analysis of hardness, 1559

VOGT, J. W., with WOOD, L. J. A study of some reactions between dry inorganic salts. VI. The reciprocal system $CsCl + KBr \rightleftarrows CsBr + KCl$ below the fusion temperature, 1048

VOLD, M. J. *See* VOLD, R. D.

VOLD, R. D., and VOLD, M. J. Thermal transitions of the alkali palmitates, 1813

VOLD, R. D. *See also* MCBAIN, J. W.

VOORHIES, A., JR. Carbon formation in catalytic cracking, 3101

VOWELS, R. E. Transformation matrices in electrical engineering, 429

DE VRIES, H. The quantum character of light and its bearing upon the threshold of vision, the differential sensitivity and visual acuity of the eye, 1351; *see also* COSTER, D.

VYAS, N. D., and BATRA, K. C. A rapid method for the mechanical analysis of soils for extensive soil survey work, 694

VYSSOTSKY, A. N., and REUYL, D. Distant companions of 36 Ursae Majoris, 480

VYSSOTSKY, A. N. *See also* WILLIAMS, E. T. R.; WIRTANEN, C. A.

WACKHER, R. C., LINN, C. B., and GROSSE, A. V. Physical properties of butanes and butenes, 2728

WADDAMS, A. L. The flow of heat through granular material, 1790

WADSWORTH, K. D., and HINSHELWOOD, C. N. The kinetics of aromatic sulphonation reactions: the sulphonation of *p*-nitrotoluene and of chlorobenzene by sulphur trioxide, 342

WAGGETT, G. An analysis of the irregularities in worsted yarns and slivers, 3075

WAGMAN, D. D., KILPATRICK, J. E., TAYLOR, W. J., PITZER, K. S., and ROSSINI, F. D. Heats, free energies, and equilibrium constants of some reactions involving O_2, H_2, H_2O, C, CO, CO_2 and CH_4, 1484

WAGNER, C. On the joint action of flow, diffusion and chemical reaction in heterogeneous catalysis, 351

WAGNER, R. H. Osmometry of high-polymer solutions, 878

WAGSTAFF, J. B. *See* JACKSON, R.

WAHL, A. M. Analysis of the Valverde thermostat, 844

WAKEHAM, H., and SKAU, E. L. A tensiometric method for evaluating surface wettability by measurement of the contact angle, 2184

WALD, G. Spectral sensitivity of the human eye. I. A spectral adaptometer, 1450; Spectral sensitivity of the dark-adapted human eye, 1453

WALDER, P. S. *See* ALLEN, P.

WALEN, R. *See* ROSENBLUM, S.

WALES, M. *See* BEATTY, S.

WALKER, A. G. Foundations of kinematical relativity, 837

WALKER, B. Y. *See* MCDOWELL, C. A.

WALKER, E. C. The spectrographic binary Lambda Andromedae, 82

WALKER, G. E. *See* BOOW, J.

WALKER, R. MCC. Flow over quadratic weirs and over weirs with discharge proportional to head, 867

WALKER, V. Circulation in steam boilers, 2179

WALKER, W. J. Temperature, pressure, and specific-volume changes of a gas mixture under dissociation and re-association conditions, with combustion following the straight-line law, $P = mV + n$, 598

WALKEY, J. E. *See* MATSEN, F. A.

WALL, A. A. *See* SHERESHEFSKY, J. L.

WALL, C. N. Atomic distribution function of liquid argon, 1726
WALL, F. T. The structure of copolymers. II, 1577
WALL, F. T., and BANES, F. W. Association of some organic acids in benzene solution, 2811
WALL, H. S. Note on the expansion of a power series into a continued fraction, 1607
WALLACH, H. *See* KÖHLER, W.
WALLENQUIST, A. Photometric observations of double stars, 797
WALLING, C. The polymerization of styrene in phenolic solvents, 1054; Gel formation in addition polymerization, 2534
WALSH, A. D. The absorption spectra of the chloroethylenes in the vacuum ultra-violet, 911; The absorption spectra of acrolein, crotonaldehyde and mesityl oxide in the vacuum ultra-violet, 2929; *see also* PRICE, W. C.
WALTER, J. E. Multiple adsorption from solutions, 2504
WALTERS, W. D. *See* KLUTE, C. H.
WALTHER, A. K. *See* KORSUNSKY, M. I.
WALTHER, H. Mineral-powder suspensions in bitumen and related substances. I, 1558
WALTON, H. F. *See* NELSON, R.
WALTON, W. H. *See* SOWERBY, J. McG.
WALZ, F. C. *See* PIETENPOL, W. B.
WANG, C. C. Electromagnetic field inside a cylinder with a gap, 3062
WANG, C. S., and CHANG, W. Y. Analysis of beta-disintegration data. I. The Sargent curves and Fermi and K.U. theories of beta-radioactivity, 294
WANG, C. S. *See also* CHANG, W. Y.
WANG, F. T. Some remarks on oscillating series, 50
WANG, H. C. On the projective linear element of a non-holonomic surface, 38
WANG, J. S. Note on Kirkwood's theory of superlattices, 390; Approximate partition function in generalized Bethe's theory of superlattices, 1686
WANG, J. S., and MEI, J. Y. On the application of Kirkwood's theory of order-disorder transformation to adsorption, 1685
WANG, K. C. Radioactivity of the neutron, 3072
WANG, K. C., and TSAO, H. L. An attempt at finding the relationship between the nuclear force and the gravitational force, 643; Relationship between nuclear force and gravitational force, 2368
WANG, M. H. On the binding energy of deuteron and the neutron-proton scattering by a new potential, 642
WANG, S. C. *See* KO, C.
WANG, S. N., and LU, C. S. An X-ray examination of crystals of triphenylmethyl chloride and bromide, 710
WANNIER, G. H. The magnetic field inside a ferromagnet, 3057
WARD, A. F. H., and TORDAI, L. A new precision method for interfacial tension, 126; Existence of time-dependence for interfacial tension of solutions, 129
WARD, J. J., KIRNER, W. R., and HOWARD, H. C. Alkaline permanganate oxidation of certain condensed cyclic compounds including coal, 2461
WARD, M. Euler's three biquadrate problem, 2082
WARD, P. A. *See* STOLL, A. M.
WARES, G. W. Partially degenerate stellar models, 831
WARING, C. E., and HORTON, W. S. The kinetics of the thermal decomposition of gaseous tetramethyl-tin, 3089
WARNE, R. J. *See* COULSON, E. A.
WARNER, A. E. *See* MASSIE, G. M.
WARNER, B. R. Pressure dependence of the rate of the gasification of carbon, 1060
WARNER, R. C. Separation of α- and β-casein, 980
WARREN, C. E. *See* CRINER, H. E.
WARREN, D. T. Proton primaries of atom-annihilation cosmic rays, 624; Atom-annihilation cosmic rays at Mexico City, 987
WARREN, T. S. List of fluorescent minerals, 181
WARRINGTON, M. *See* CASTELL, H. C.
WARSON, L. *See* KOMAREWSKY, V. I.
WASER, J., and LU, C. S. The crystal structure of biphenylene, 1581
WASHBURN, E. R., and STRANDSKOV, C. V. The ternary system *n*-butyl-alcohol–benzene–water at 25° C. and 35° C, 1046
WASHBURN, E. R. *See also* ALBERTY, R. A.
WASHBURN, H. W., WILEY, H. F., ROCK, S. M., and BERRY, C. E. Mass spectrometry, 1765
WASHER, F. E. Region of usable imagery in airplane-camera lenses, 1370
WASOW, W. On the asymptotic solution of boundary-value problems for ordinary differential equations containing a parameter, 1624
WASSERFALL, K. F. Harmonic analysis of the annual variation of magnetic declination and horizontal intensity at Oslo, 1843-1930, 2605
WATAGHIN, G. Statistical mechanics at extremely high temperatures, 496; On the production of groups of mesotrons by high energy collisions, 2336; *see also* POMPEIA, P. A.; SALA, O.
WATKINS, W. I. Observations on the properties of loess in engineering structures, 2631
WATSON, J. M. The ripening of Ehrlich's haematoxylin, 200
WATSON, N. A. Air- and bone-conduction audio testing assembly, 1346
WATSON, W. H. A theory of the creation of electric charge, 1820; Discontinuous motion of an electric particle, 1905
WATSON-MUNRO, C. *See* MARSDEN, E.
WAVRE, R. The spectral decomposition of Hermitian operators, 1208; On linear equations involving a Hermitian operator, 1209; A note on the iteration of Hermitian operators, 1210
WEAVER, L. R. *See* RICHARDS, L. A.
WEBB, H. W. Factors which influence the mechanical strength of clayware, 3088
WEBB, H. W., and MESSENGER, H. A. Lifetimes of resonance lines of cadmium, 176
WEBB, R. L., and MURRAY, C. S. Vibration protection for rotating machinery, 533
WEBB, W. S. The use of physics and the methods of physics in archaeology, 85
WEBER, A. H., and DAHM, C. H. Electron diffraction camera viewing screen and photographic plate holder of simple design, 2320
WEBER, A. H., and FRIEDRICH, L. W. The photoconductance of evaporated bismuth films, 977
WEEKS, D. W. *See* RUSSELL, H. N.
WEHRMANN, R., YNTEMA, L. F., and VERDIECK, R. G. The electrochemistry of baths of fused aluminium halides. III–IV, 682
WEIGLE, J. *See* BLEULER, K.
WEIL-MALHERBE, H., and WEISS, J. Some observations on the photochemistry of fluorescent substances. I. The quenching of fluorescence by nitric oxide and the photochemical formation of nitroxides. II. Concentration quenching (self-quenching) of fluorescence, 691
WEILL, A. R. X-ray diffraction, 1981
WEILLER, P. G., and BLATZ, I. H. Electronic thermometer, 216
WEIMER, P. K., KURBATOV, J. D., and POOL, M. L. *K*-electron capture in radioactive argon, 1006
WEINBAUM, S. On the solution of definite integrals occurring in antenna theory, 1623
WEINBERG, S. *See* MILNER, O.
WEISBLATT, D. I. *See* WOLFROM, M. L.
WEISS, J. Radiochemistry of aqueous solutions, 296; *see also* KRONBERGER, H.; WEIL-MALHERBE, H.
WEISS, P. On hydrodynamical images. Arbitrary irrotational flow disturbed by a sphere, 1710
WEISSBERGER, A., and LU VALLE, J. E. Oxidation processes. XVII. The autoxidation of ascorbic acid in the presence of copper, 352
WEISSLER, G. L. *See* FISHER, L. H.
WEITKAMP, A. W. The acidic constituents of Degras. A new method of structure elucidation, 2525
WELLS, A. F. Indexes of data for identification purposes, 3132
WELLS, C. P., and SPENCE, R. D. The parabolic cylinder functions, 2093
WELLS, D. A. A demonstration laboratory for advanced dynamics, 2754
WELLS, S. D. Introduction of additional sulphur into alkaline cooking liquors by means of sodium sulphite, 1599
WELLS, W. F. Ray length in sanitary ventilation by bactericidal irradiation of air, 742
WELTER, G. The yielding phenomenon of metals. I–VI, 1551, 2408

Veltmann, R. N. A flow-curve recorder for a rotational viscometer, 2779
Ventworth, C. K. The flow of liquids through thin cracks, 512
Vergin, W. Discussion on electron microscopy of cellulose fibres, 1544
Vest, C. D. A method of growing oriented sections of certain optical crystals, 2572
Vest, G. D. Reflection in a non-isotropic medium, 1435; *see also* Gold, E.
Vest, P. W. Methods for determining refractive indices in polarized-light microscopy, 1372
Vest, P. W., and Amis, E. S. A microcalomel electrode for polarographic measurements, 2481
Vest, S. S. The relative abundance of the carbon isotopes in petroleum, 3068
Vest, T. F. *See* Gillam, A. E.
Vest, T. S., and Beacham, C. C. Precise measurement of deep electrical anomalies, 1135
Vestberg, R. On the integral theorems of Gauss and Stokes, 1192; The forces on a body in an incompressible viscous fluid, 1286
Vestfall, J. E. *See* Schmelzle, A. F.
Vestöö, R. *See* Lagerqvist, A.
Vestwater, F. L. Some properties of geotropic motion, 1586
Veyer, E. R. Microviscometer, 2778
Veyl, H. Comparison of a degenerate form of Einstein's with Birkhoff's theory of gravitation, 487; How far can one get with a linear field theory of gravitation in flat space-time? 1677
Wheatley, G. A. *See* Kuhn, H.
Wheeler, T. S. A note on the evaluation of the Schrödinger hydrogenic intensity integral, 91
Wheland, G. W. Molecular constants and chemical theories, 2512
Whiffen, D. H., and Thompson, H. W. The infra-red spectra of cresols and xylenols and the analysis of cresylic acid, 2922
Whiffen, D. H., Torkington, P., and Thompson, H. W. The use of infra-red absorption in analysis. B. Examples of analyses, 1418
Whiffen, D. H. *See also* Thompson, H. W.
Whipple, F. J. W., and Chalmers, J. A. On Wilson's theory of the collection of charge by falling drops, 2043
Whistler, R. L., and Hilbert, G. E. Mechanical properties of films from amylose, amylopectin, and whole starch triacetates, 1021
White, D. R. A proposed spectral sensitivity index to describe photographic emulsions, 692
White, G. S. J., and Vickerstaff, T. Colour, 2955
White, J. G. *See* Robertson, J. M.
White, P. Abnormal paranthelia, 415
White, R. E. *See* Othmer, D. F.
White, W. T. *See* Pekeris, C. L.
Whitehead, S. An approximate method for calculating heat flow in an infinite medium heated by a cylinder, 207; Correlations in dielectric phenomena for various types of applied voltages, 233; Power laws for the dependence of strain on time and stress, 2427
Whitehead, T., Jr., and Boyle, A. J. A spectrographic method for small amounts of calcium in magnesium metal, 172
Whiteleather, J. E. Analysis of the target condition of rotating anode tubes with a spinning top, 2209
Whiteley, A. H. *See* Harvey, E. N.
Whitford, A. E. *See* Stebbins, J.
Whitlow, E. P., with Felsing, W. A. Heats of dilution and heat capacities of aqueous solutions of mono-, di-, and tri-methylamine hydrochlorides, 1489
Whitrow, G. J. On the vectors and invariants of kinematic relativity, 2736; The two-body problem in Milne's theory of gravitation, 2739
Whittaker, E. J. W., Smithson, F., and Tomkeieff, S. I. Particle shape, 2567
Whittaker, E. T. The new algebras and their significance for physics and philosophy, 13; Spin in the universe, 1680
Whittenberger, R. T. *See* Speiser, R.
Wichers, E. *See* Schwab, F. W.
Wichrowski, A. F. *See* Leichtle, P. A.
Widström, G. *See* Snellman, O.
Wiedeman, O. F. *See* Davis, H. S.
Wiedenbeck, M. L. The nuclear excitation of silver and cadmium, 1855; The nuclear isomerism of gold, 1963; The nuclear excitation of rhodium, 2379
Wiedenbeck, M. L., and Marhoefer, C. J. A new method for determining thresholds in γ-n processes, 1964
Wiedmann, L. *See* Kirkpatrick, P.
Wiegand, W. B., and Braendle, H. A. Effect of milling on properties of Hevea and Buna rubbers, 660
Wiegand, W. B. *See also* Braendle, H. A.
Wieland, K. Thermal decomposition of $HgCl_2$ vapour, 3001
Wiersma, C. A. G. *See* van Harreveld, A.
Wigglesworth, V. B. Abrasion of soil insects, 420
Wight, K. C. *See* Bratt, J. B.
Wightman, A. *See* Margenau, H.
Wikander, O. R. Dynamics of an elastic bar, 2755
Wilchinsky, Z. W. X-ray measurement of order in the alloy Cu_3Au, 2026
Wilde, W. S. Simplified equations for the distribution of chloride in body water, 739
Wildschut, A. J. Pseudo-plastic phenomena with vulcanized rubber, 2415
Wildt, R., and Chandrasekhar, S. On the absorption coefficient of the negative oxygen ion, 822
Wiley, H. F. *See* Washburn, H. W.
Wiley, J. W. *See* Tyson, G. N., Jr.
Wiley, R. E. *See* Stewart, W. C.
Wilkes, G. B. *See* Smith, W. R.
Wilkie, J. J. A speed indicator for high-speed shafts, 1271
Williams, A. O., Jr., and Labaw, L. W. Acoustic intensity distribution from a piston source, 1344, 2205
Williams, B. H. Sequence of soil profiles in loess, 2628
Williams, D., and Dale, B. Further studies of the infra-red absorption of rubber, 178
Williams, E. T. R., and Vyssotsky, A. N. The frequency of distant companions, 479
Williams, J. W. *See* Scatchard, G.
Williams, R. C., and Wyckoff, R. W. G. Electron shadow-micrographs of haemocyanin molecules, 3038
Williamson, A. T. The exact calculation of heats of solution from solubility data, 595
Willingham, C. B., and Rossini, F. D. Improved reflux regulator and head for laboratory distilling columns, 1126
Willis, G. M. *See* Austin, A. T.
Willis, H. A., and Philpotts, A. R. Two time-saving devices in the conversion of energy records into percentage absorption curves, 1388
Willis, H. A. *See also* Sutherland, G. B. B. M.
Willis, J. B. The polarographic reduction of rhodium compounds, 688; The polarographic reduction of the platinum metals, 3116
Willisford, L. H. Techniques useful with pigmented rubber cements, 2023
Willmer, E. N., and Wright, W. D. Colour sensitivity of the fovea centralis, 2961
Wilson, C. L., and Wilson, K. B. Electrolytic reduction of cinnamic acid. A new preparative method for $\beta\gamma$-diphenyladipic acid, 686
Wilson, C. W. *See* Glucksmann, A.
Wilson, D. G. *See* Pollak, H.
Wilson, E. B., and Worcester, J. A second approximation of Soper's epidemic curve, 1218; The epidemic curve with no accession of susceptibles, 1219; The law of mass action in epidemiology, 2462
Wilson, K. B. *See* Wilson, C. L.
Wilson, W. K. *See* Scribner, B. W.
Wilson, W. M., Bruckner, W. H., Duberg, J. E., and Beede, H. C. Fatigue strength of fillet-weld and plug-weld connections in steel structural members, 322
Winans, J. G. Partial selection rule for sensitized fluorescence, 2937
Winn, H., and Shelton, J. R. Fatigue failure of GR-S tread stocks, 2422
Winn, H. *See also* Shelton, J. R.
Winokur, M. A magnetic stirrer for continuous gas-flow apparatus, 2526
Winslow, E. H. *See* Liebhafsky, H. A.
Wint, R. *See* Koch, W.
Winternitz, W. *See* Sobotka, H.

WINTERSTEIN, H., and SEDEFCIYAN, A. Effects of constant current in relation to "functional polarity," 2637
WIRTANEN, C. A., and VYSSOTSKY, A. N. McCormick photovisual sequences, 2704
WISELOGLE, F. Y. *See* EVANS, R. C.
WISLICENUS, G. F. A study of the theory of axial-flow pumps, 2196
WITHEROW, H. M., and HANSEN, A., JR. Electrically driven gyroscopes for aircraft, 101
WITLIN, B. Darkfield illuminators in microscopy, 2968
WITMER, F. P. The use of models as a practical aid in the design of suspension bridges, 1154
WITT, N. F. *See* HULTQUIST, M. E.
WOLF, A. Motion of a rigid sphere in an acoustic wave field, 1744
WOLFE, R. A., and FOWLER, R. G. An application of spectrographic methods to chemical concentrations of trace elements in iron and steel analysis, 1389; 2554
WOLFE, R. A. *See also* FOWLER, R. G.
WOLFENSTEIN, L. Theoretical calculations on extensive atmospheric cosmic-ray showers, 1885
WOLFROM, M. L., WEISBLAT, D. I., and HANZE, A. R. The reactivity of the monothioacetals of glucose and galactose in relation to furanoside synthesis, 1579
WOLLAN, E. O. On the production of mesotrons at high altitudes, 2335; *see also* POMPEIA, P. A.
WOO, S. C., and CHANG, S. T. The absorption spectrum of methylglyoxal, 1771; Quantitative determination of methylglyoxal, and the mechanism of its reaction with hypoiodite solution, 2449
WOOD, L. A., and ROTH, F. L. Stress/temperature relations in a pure-gum vulcanizate of natural rubber, 1995;
WOOD, L. A. *See also* JONES, G.; ROTH, F. L.
WOOD, L. J. *See* VOGT, J. W.
WOOD, R. W. Improved diffraction gratings and replicas, 579
WOOD, S. E., and AUSTIN, A. E. The volume of mixing and the thermodynamic functions of binary mixtures. II. Benzene-cyclohexane, 2283
WOOD, W. *See* NACHOD, F. C.
WOOD, W. A. Study of internal stress in a metal by X-ray diffraction, 3087
WOODHEAD, E. H. Vibration problems in the design of marine oil engines, 2839
WOODRUFF, B. G. *See* RICHTER, C. P.
WOODRUFF, E. B. *See* SHEEN, R. T.
WOODSON, R. A. Coma-free high-aperture twin ellipsoid mirror, 1462
WOODWARD, E. J. Note on the periods of 20 eclipsing binaries, 811
WOODWARD, I. *See* UBBELOHDE, A. R.
WOOSTER, N., and WOOSTER, W. A. X-ray topographs, 3124
WOOSTER, W. A., and COLE, R. A spherical template for drilling balls for crystal structure models, 2158
WOOSTER, W. A. *See also* WOOSTER, N.
WOOTTON, W. R. Dew point of flue gases, 1732
WORCESTER, J. *See* WILSON, E. B.
WORF, D. L. *See* SAUER, J. A.
WORKS, C. N., DAKIN, T. W., and BOGGS, F. W. A resonant-cavity method for measuring dielectric properties at ultra-high frequencies, 2294
WOUDENBERG, J. P. M. *See* FRANZEN, P.
WOUTERS, H. M. *See* MICHELS, A.
WRIGHT, J. H. *See* SIAS, F. R.
WRIGHT, W. D. *See* WILLMER, E. N.
WRINCH, D. Fourier transforms and structure factor, 2568
WU, C. K., and YANG, C. T. The relation between the force constant and the interatomic distance of a diatomic linkage, 1000
WU, C. S., and SEGRÈ, E. Radioactive xenons, 1945
WU, T. J. Projectivities on a line and non-Euclidean motions in space, 40
WU, T. Y. On the existence of atomic nitrogen in the upper atmosphere of the earth, 405; Auto-ionization in doubly excited helium and the $\lambda 320{\cdot}4$ and $\lambda 357{\cdot}5$ lines, 1399
WU, T. Y., and SHEN, S. T. Variational energies of anomalous states of 2- and 3-electron configurations of light atoms, 3067
WUL, B. Dielectric constants of some titanates, 3009
WYCKOFF, R. W. G. *See* WILLIAMS, R. C.
WYLIE, C. R., JR. On the forced vibrations of non-linear springs, 890
WYMAN, M. Static isotropic solutions of Einstein's field equations, 838
WYNNE, C. G. Vignetting, 168
WYNNE-JONES, W. F. K., and RUSHBROOKE, G. S. Dimerization in perfect solutions. Analysis of data of Brown and Bury, 520

YALOW, R. S., and GOLDHABER, M. A "fast" gamma-ray transition, 1953
YALOW, R. S. *See also* SCHARFF-GOLDHABER, G.
YANG, C. N. A generalization of the quasi-chemical method in the statistical theory of superlattices, 2575; Variation of interaction energy with change of lattice constants and change of degree of order, 2743
YANG, C. T. *See* WU, C. K.
YAO, F. H. *See* SUEN, T. J.
YARDLEY, V. A. Modified construction of an automatic siphon, 2530
YARNALL, D. R. *See* STUART, M. C.
YARNOLD, G. D. The energies of uniformly accelerated particles in a gas, 2833
YAVORSKY, P. J. *See* GELLER, R. F.
YEATER, M. L. A study of time variations in the cosmic-ray directional intensity distribution, 1889
YEE, J. Y. *See* HARDESTY, J. O.
YEN, C. T. On matrices whose association matrices are equal, 16
YNTEMA, L. F. *See* WEHRMANN, R.
YOFFE, A. *See* HEYMANN, E.
YORKE, S. G. Glass spirals for use in sensitive pressure gauges, 2770
YOUNG, D. Inelastic buckling of variable-section columns, 2753
YOUNG, D. W., and BIERTUEMPFEL, R. E. The viscosity of the methyl ester of dilinoleic acid, 113
YOUNG, F. E. Heats of formation of $Mg(NO_3)_2$, $Mg(NO_3)_2 \cdot 6H_2O$, $Ca(NO_3)_2$, $Ca(NO_3)_2 \cdot 4H_2O$, and $Ba(NO_3)_2$, 225; The heats of formation of $Al(NO_3)_3 \cdot 6H_2O$ and $Al(NO_3)_3 \cdot 9H_2O$, 226; Heats of formation of $Al_2(SO_4)_3 \cdot 6H_2O$, $Al_2(SO_4)_3$, $KAl(SO_4)_2 \cdot 12H_2O$, and $KAl(SO_4)_2$, 2282; Heats of formation of $NH_4Al(SO_4)_2 \cdot 12H_2O$ and $NH_4Al(SO_4)_2$, 2999; *see also* SHOMATE, C. H.
YOUNG, G. H., and SEAGREN, G. W. Anomalous inactivation of heavy metal anti-fouling paints, 2020
YOUNG, L. G. The routine spectro-chemical analysis of steel, 421
YOUNG, R. T. A note on some laboratory measurements of the transparency of sea water, 2245
YOUNG, R. W. Some problems for post-war musical acoustics, 537
YOUNG, W. G. *See* PRESSMAN, D.
YOUNGER, J. O., and ARONOVSKY, S. I. Physical evaluation of straw and other agricultural residue pulps. Proposed method, 3142
YRAOLA, F. V. A. Stock preparation in paperboard mills, 1552
YU, S. H. The space groups of $NiCl_2 \cdot 6NH_3$, $NiBr_2 \cdot 6NH_3$ and $NiI_2 \cdot 6NH_3$, 385; An improved algebraic method for the determination of crystal structure from X-ray data, 391
YU, S. H., and HO, C. P. A new method of analysis of X-ray data for the determination of crystal structure —its application to iron pyrites, 392
YUDKIN, J. Adsorption colorimetry as an analytical technique, 2024
YULE, J. A. C. Theory of the halftone process. II. The diffraction theory—calculation of the light distribution, 768; III. Dot size and halftone density, 769
YULE, J. A. C., JOHNSTON, F. B., and MURRAY, A. A new type of contact halftone screen, 767

ZADE, H. P. Use of high-frequency ionizing devices for arc welding, 1520
ZAGOR, H. I., and VALENTE, F. A. Heavy particle groups from the neutron disintegrations of nitrogen and neon, 1965
ZAHN, H. *See* ELÖD, E.

'AN ZANDT WILLIAMS. *See* BARNES, R. B.
APP, R. L. *See* BALDWIN, F. P.
AVALES, C. T. *See* SLACK, C. M.
ECHMEISTER, L., and POLGÁR, A. On the occurrence of a fluorescing polyene with a characteristic spectrum, 916; Contribution to the stereochemistry of γ-carotene, 2521
EILON, N. On the theory of the Stark effect, 1508
ELENY, J. Observations and experiments on condensers with removable coats, 1827
ENTMYER, G. A. Inhibition of metal catalysis as a fungistatic mechanism, 1077
ERNOV, D. V., ELINSON, M. I., and LEVIN, N. M. Investigation of the auto-electronic emission of thin dielectric films, 1867
ITTLEMOYER, A. C., and KUTOSH, S. Viscosities of molten coumarone-indene resins, 863
ITTLEMOYER, A. C. *See* STEPHENSON, C. C.
EGENSPECK, H. On lengthwise polarized fluorescence of fibre-dyeing, 188
EGLER, J. A. Photochemical destruction of vitamin B_2 in milk, 363; *see also* THODE, H. G.
N DER ZIEL, A. *See* STRUTT, M. J. O.
ELINSKI, H. H. Measurement of high vacua, 112
MENS, K. E. Determination of surface and measurement of diffusion by radioactive rare gases. III. The process of producing emanation from disperse systems. Conclusions regarding the evaluation of measurements of emanation power and the interpretation of results, 292
ZIMM, B. H. Molecular theory of the scattering of light in fluids, 1775; *see also* DOTY, P. M.
ZIMM, B. H., and MAYER, J. E. Vapour pressures, heats of vaporization, and entropies of some alkali halides, 214
ZLOTOWSKI, I., and KOLTHOFF, I. M. Polarographic behaviour of alkaline earth metals. I. Barium and strontium, 1090
ZLOTOWSKI, I., and PREBUS, A. F. Computation of electron trajectories in electrostatic lenses of rotational and plane symmetry, 1858
ZLOTOWSKI, I. *See also* PREBUS, A. F.
ZOOK, H. D. *See* SUTER, C. M.
ZSCHOKKE, H., and MONTANDON, R. Effect of inclination of seam welds on tensile strength, 1035
ZUBERI, S. H. *See* CHAUDHURI, R. M.
ZUHR, H. F. *See* ASTON, J. G.
ZWEMER, R. L. *See* LYNN, J. G.
ZWICKER, B., and SCHERRER, P. Electro-optical properties of the Rochelle-Electric crystals KH_2PO_4 and KD_2PO_4, 3012
ZWIKKER, C., VAN DEN EIJK, J., and KOSTEN, C. W. Absorption of sound by porous material. II–V, 1348
ZYPKIN, S. I. *See* KORSUNSKY, M. I.

ALPHABETICAL SUBJECT INDEX

ɔsorption
Light 535.34 *see also* Densitometry; Spectra
cells 177, paper, opacity test 912, pigments, opacity 929, thickness control of sharp cut-off glasses 1408, 2255, graphical correlation with thickness 1772, sea water 2245, molecular extinction coeff. 2906, sea, to daylight 2934
Sound *see* Acoustical measurements
X-rays *see* X-ray absorption
:celeration measurement 531.76
3-comp. accelerometer 506, bellows accelerometer 507, gyroscope testing 2767
·ids 541.452
SO_2 in methanol 1084, acidity, H_2SO_4 in nitromethane 1574
oustic impedance 534.231.3
wide-range adjustable 1345, impedance of fog 2846, wave-theory, appl. 2849
oustical measurements 534.6 *see also* Vibrations
microphone effect 541
Absorption 534.62
ultrasonic 534, 538, porous material 1348, Indian materials 1747, lined ducts 2207, nomogram 2208, ultrasonic, by optical method 2845, air 2854
Frequency 534.63
electrical tuning-fork checking 2201, tuning-fork standard 2848
Intensity 534.61
Rayleigh disc 540, 1343, intensity distribution 1344, standard microphone 2847
Velocity 534.614
in vapours 155, Young's modulus det. 313, ultrasonic, in gases 539, rel. to assoc. in liquids 1306, ultrasonic, in oils 1334, CO and D_2 at low temp. 1335, dry air and methane 1743, ultrasonics optical method 2845
oustics 534 *see also* Architectural acoustics; Doppler effect; Hearing; Noise abatement; Sound reproduction; Ultrasonics; Vibrations
motion of rigid sphere 1744, acoustic feed-back prevention 2203, intensity distribution, piston source 2205, artificial voice 2210
Musical 534.3 *see also* Organ pipes
post-war problems 537, science and music 894, intonation of clarinet 1337, instruments 1742
Propagation 534.2 *see also* Shock waves
ultrasonics, solid plate 534, change of cross-section 535, lined ducts 536, ultrasonics 538, directional
Acoustics—*contd.*
Propagation—*contd.*
patterns 1332, ultrasonics, wave front 1339, in liquid He II 2986
Activation
Reaction kinetics 541.124.7
hydrolysis of glucosides 1055, activity coeff., MeNH . HCl 1489
Adhesion 539.61
drop formation 1722, lubricated metals 2436
Adsorption 541.183 *see also* Chemical analysis; Latent heat; Films
surface area 108, 110, phase transition 366, *sec.* octyl-alcohol/water 367, energy 368, 1113, KCl 504, riboflavin by lactose 698, paraffin-chain salt to proteins 699, dye anions on keratin 1114, dehydration of gases 1115, β carotene on alumina 1116, activated carbon, solvent vapours 1117, free surface energy 1118, water vapour by proteins 1119, H by W 1120, isotherms 1303, order-disorder theory 1685, superlattice theory 1686, vapour on keratin fibres 1727, artificially produced radioactive atoms 1960, adsorption colorimetry 2024, effect of sub-phase 2502, towers, theory 2503, solutes from solutions 2504, H by Cu 2505, Chinese clays 3109, H on ferromagnetic metals 3110, multimolecular 3111, water by wool 3112
Aerials *see* Electromagnetic waves
Aerodynamics 533.6 *see* Aeronautics; Airfoils; Airscrews; Wind tunnels
mine-ventilation inst. 145, electric balance for stability meas. 886, gas flow in tube 1315, turbulence theory 1318, vel. and temp. distrib. in turbulent wakes 1319, 1320, non-linear problems 1625, axial-flow pumps 2196, flat plate heat-exchange 2828
Aeronautics 533.6
max. aircraft speed 526, 2829, theory of flight 1316, parasitic resistances 1317, aircraft vibrations 1321, turning in wind 2197, optimum height of rocket or jet bomb 2830
Aerosols 541.182.2/.3 *see* Disperse systems
Agitation 542.231.8
nature and measure 327, mass-velocity theorem 328, gas-liquid, performance 329
Agriculture 63 *see also* Insecticides; Soils
flotation, ergot from rye 133, dehydration of prunes 206, land drainage 410, tree form 734, 1591, 1592,

Agriculture—*contd.*
bark removal, chemical treatment 1155, fertilizer hygroscopicity 2819
Air pollution 614.71
glycol, v.p. control in room air 586, bactericidal irradiation 742
Aircraft 629.13
safe max. speed 526
Airfoils 533.6
Joukowsky airfoil 146, flow around flaps 147, ring airfoil 1322
Airscrews 533.662
propeller efficiency 1717
Algebra 512
the new algebras 13, electronic calculator 2084
Alloys 669.018 *see also* Iron and steel; X-ray crystallography; X-ray examination
cohesive strength 317, Al–Cu–Mg constitution 671, β Al–Mg 711, Ni–Zn 1022, Bi–Pb–Zn eutectic 1045, order in Cu_3Au 2026, solubility of Mn in Al 2193, 2814, Mg, superheating, grain refining 2418, damping capacity 2420, Au 2440, Mg, grain orientation 2594
Alpha rays 539.164
emission theory 651, Po spectra 1942, spectrometer 1947, Po, short range 1948
Biological action 539.164.94
virus inactivation 260, broad bean root 262
Aluminium 669.71
spectrographic methods 703
Angular velocity measurement 531.77
demonstration instrument 857, magnetic-drag 858, electronic counter 859, synchronous motor 860, photocell, high-speed 1271, electronic tachometer 1698, 2768, gyroscope testing 2767
Architectural acoustics 534.84
reproduction in small rooms 552, sound waves in rooms 2212, sound-insulation 2213
Arcs
Electric 537.52
energy level populations 1391, C, energy balance at +ve crater 1510, welding, additional ionization by h.f. 1520, continuum at Hg cathode 1845, Hg arc stability 1846, cyclotron ion source 2328, 3071, pool cathode design 3046
Area measurement 531.72
egg albumen 108, small objects 109, adsorption apparatus 110, emanation method 292, 293, adsorption methods 1118, dye method and projection 1269, fibres 1697, solid particles 2762
Art 7
laboratory design 2730, relation to science 2733
Association
Liquids 532.74
oxyacids 519, rel. to velocity of sound 1306, silicic acid esters 1307, rel. to fluidity 2172, TlCl solutions 2300, organic acids 2811
Astronomical instruments 522.2/.6
microsensitometry 456, photo-electric methods 558, double-star photometer 797, monochromator, temp. effect 798, Greenwich, division errors 1653, Schmidt–Cassegrain variant 1759
Astronomical spectra
molecular, interpretation 481, planets 2697
Comets 523.67
cyanogen bands 802, 2904
Cosmic dust 523.161
Na lines 457
Novae 523.87
Herculis 467, (1942) Cyg. 469, Puppis 470
Stars 523.87 *see also* Radiation
Li I and Na I lines 83, absorption coeff. of O^- 822, $\bar{\alpha}^2$ C Ven, ionized rare earths 823, ϕ Persei, He anomaly 824, H^- absorption 825, Ceph. variables 1228, HD 193576 1668, galaxies, red shift 1748, spectrum of 39 ε Capricorni 2132, interaction of proton with H and He atoms 2297, 2298, W Serpentis 2712, AB Persei 2713, RZ Scuti 2715, interpretation 2717, H and O neg. ions 2718, spectrographic observations 2720, white-dwarf spectra 2722, cyanogen bands 2904, absorption of light by Na^- ions 2927
Sun 523.77
colour temperature 1662, concentration of OH 2117, excitation of coronal lines 2703
Astrophysics 521.03
variable angular velocity 80, cosmic cloud, movement 795, energy liberation 1222, degenerate stellar masses 1223, cosmic static 2112
Atmosphere 551.51 *see also* Clouds; Ionosphere
solar eclipse (1944) 832
Composition 551.510
volcanic contributions 401, atomic N 405
Humidity 551.571 *see also* Rainfall
upper-air calculations 1584
Mechanics 551.513 *see also* Wind
periodic pressure systems 406, exchange action 407
Spectra *see* Night-sky; Sky brightness
Temperature 551.524
Lerwick and Kew data 1585
Thermodynamics 551.511
diagrams 1143, geostrophic motion 1586
Atmospheric disturbances 551.515 *see also* Thunderstorms
Texas storm 725, waterspout structure 2038
Atmospheric electricity 551.594 *see also* Aurora; Ionosphere; Lightning
luminosity persistence 416, ionization equilibrium 728, charge neutralization by ions 1870, electron distribution in ionosphere 2037, fields below clouds 2041, charge on falling drops 2043
Atmospheric optics 551.593 *see also* Sky brightness
spectrum on cloud 414, paranthelia 415, lunar coronae 458, refraction formula 484, refraction between 2 stations 485, vapour trails 1147
Atmospheric pressure 551.543
geostrophic motion 1586, charts over ocean 2039
Atomic structure 539.15 *see also* Nucleus; Quantum theory; Spectra
hydrogen intensity integral 91, Zeeman effect 493, modern theory, survey 996, 2367, Rydberg constants, e/m 1821, K-atom central field 1926, 2- and 3-electron config. energies 3067
Aurora 551.594.5
rel. to magnetism 729
Autoxidation 541.128.24
ascorbic acid 352
Bacteriology 576.8 *see also* Viruses
cataphoresis 250, effect of neutrons 298, growth gradient graphs 730, bacterial adaptation 731, 732, bactericidal irradiation 742, metal catalysis inhibition 1077, B. funduliformis 2045, acetobacter 2046, morphology types 2047, mounting for electron microscopy 2048, pyocyaneus 2050, effect of u.v. 2857, soft X-rays 3036
Balances 531.752
vacuum microbalance 111, anti-vibration table 503, improved precision 1270
Barometers 533.4
corrections 524, distillation type 2166, thermobarometer 2194
Bending 531.224 *see also* Buckling; Moments; Stress analysis; Torsion
reinforced monocoque cyl. 1245, straight thin-walled columns 2006, slope deflection theory 2151, ellipse of inertia 2152, curved thin tubes 2410, thin-walled members 2752
Beams
transversely loaded 1247, moving loads 1251, cantilever 1258, non-simply supported 1996, discontinuities 1997
Plates
anisotropic 311, aeolotropic 498, sectorial 848, elastic 2007, 3086
Bending moments 531.234 *see* Moments
Bessel functions 517.564.3
complex zeros 439, tabulation 442, 1197, 1214, $\sum a_n J_{n+\alpha}(z) J_{n+\beta}(z)$ 782, roots of a transcendental equation 1622, tables of $J_n(x)$ for large argument 2092, $\int_0^x J_k(x)dx$ and $\int_0^\infty J_k(x)dx$ 2677, evaluation of zeros 2678–2682, e.m. field in cyl. resonator 3062
Beta rays 539.163.2 *see also* Electrons; Scattering
emission, theory 294, 295
Biological action 539.165.94
carotene, vitamin A 1961
Spectra 539.163.2
magn. spectrometer 265, monokinetic sources 154, C^{ν} 1946, RaD → RaE 2378, Auger electrons after Zn^{65} *K*-electron capture 3035

inary stars 523.842 *see also* Variable stars
λ Andr. 82, companions, frequency 479, 36 U Maj. companions 480, photometer, self-recording 797, LDS275, white dwarfs 816, 31 Cygni 817, η Gem. orbit 818, spectrographic material 2127, AR Monoc. spectroscopic orbit 2128, HD 152270 2129
iochemistry 577.1 *see also* Enzymes; Vitamins
proteins, H_2O adsorption 1119, monolayers of egg albumin, etc. 1299, 1300, 1301, sex hormones, dipole moment 2365, denatured egg albumin immunochemistry 2773, nucleic acids, flow birefringence 2954
iological effects of radiations *see* Alpha-rays, etc.; Radiotherapy
iological technique 578
respiration manometer 1699, photo-electric luminometer 1757, mounting for electron microscopy 2048, virus electron-micrographs, effect of impurities 2049, ultrasonic vibrations 2206, cell dia. measurement 2761
iology 575 *see also* Bacteriology; Biochemistry; Botany; Cytology; Electrobiology; Fibres; Histology; Medical science; Physiology; Zoology
micrographs and films for education 2051, energetics of state 2771
irefringence *see* Double refraction
lood 591.11
effect of weak currents 251, tissue exchange 735, 2052, absorption spectrum 907, circulation model 1151, electronic flowmeter 1295, inert-gas uptake 2053, flow problem 2054, pressure and flow 2055, cross-transfusion and flow meas. 2178, colorimetric analysis 2958
oiling point 536.423.1
isocyanates 899, constant boiling hydrocarbon mixtures 1042, N_2O triple point 1471, hydrocarbons, method for calculating 1761, Si chlorobromides 2782, water 2975,
olometers 535.23.08
thermocouple-bolometer 1483, bolometer sensitivity, theory 2860
onds 541.57 *see also* Molecular structure; Valency
bond moments 372, 2514, magnetic susceptibility 632, diatomic force const. 1000, MeCl, strength 1121, C–C vibrations 1575, CH, NH force constants 1576, calc. of piezo-electric coeff. 1832, rel. to interatomic distance 1924, interatomic distance 1925, dipole-moment measurements 2366, organic iodides 2460, C–H in CH_4 2489, donor-acceptor bonding 2515
otany 581/582 *see also* Fibres
ionizing radiations 262, tree form 734, 1591, 1592, spore discharge in ferns 870, radioactive effect on penicillium 1005, cation thermoregulation 1150, virus infection u.v. detection 2216, photosynthesis in pines 2490
reaking strength 539.42 *see also* Mechanical strength
metals 315, metals, temp. effect 316, steels and alloys 317, energy distr. 318, cotton tyre cords 1999
rittleness 539.56
crystallization in rubber 669, real crystals 2433, glass rupture 2434, nitro-cellulose 2435
uckling 531.224.4
Valverde thermostat analysis 844, flexural buckling 1246, straight columns of thin-walled sections 2006, girders 2150, hardwood columns 2409, variable-section columns 2753
alculation
Graphical 518.4
reciprocal plotting 70, experimental curve representation 444, curve fitting 445, integration 446, cinema integraph 447, animal growth 730, unsteady heat flow 1466, relaxation method 1635
Methods 518 *see also* Slide rules
scientific computing 69, numerical integration 2091, infra-red spectra computer 2889
alculus
Differential 517.2
additive functions 2668, inequality satisfied by derivative 2669, monotone functions 2670
Integral 517.3
problem of moments 45, multiple, theorem 780, Gauss' and Stokes' theorems 1192, modified cosine and exponential integrals 1620, aerial theory 1623, coefficients for numerical integration 2091, multiple integral evaluation 2671, with central differences 2672, functional determinants 2673
Calculus—*contd.*
Operational 517.43
eigen-values, $d^2/dx^2 - |x|$ 1193, curvilinear co-ordinates 1944, image theorems 1613
Variational 519.3
higher space paths 58, transversality in n-space 1190, methods, applications 1647
Calorimetry 536.62 *see also* Latent heat; Specific heat
thermopile for micro-cal. 218, flow calorimeter for gases 1488
Cameras 771.31
Schmidt type 763, photo-electric flash 2080
Capacitors 537.224
dissectible 1826, 1827
Capillarity 532.6
rate of water rise 131, Hg electrodes 132, flow through cracks 512, 2185, solutions in paper 874
Cartography 526.8
conformal maps 431, non-conformal maps 432
Catalysis 541.128 *see also* Autoxidation; Reaction kinetics
azodicarbonate decomposition 348, Ni on $H\text{-}C_2H_2$ mixt. 350, 2463, 2464, 2465, local conc. differences 351, optical action 574, aliphatic *iso*-alcohols and -aldehydes 676, aromatization 677, metals in HNO_3 678, electrolytic reduction 689, 690, hydrogenation of C_2H_4, C_3H_6 and 2-butene 1068, reduction, aromatic nitro groups 1069, cracking, H transfer 1070, hydrocarbon cracking 1071, picoline oxidation 1072, hydrogenation, dehydrogenation 1073, ascorbic acid, oxidation 1074, vulcanization, GR–I 1075, oxidation, ethylene 1076, hydrocarbon isomerization 1124, alcohol dehydrogenation 2459, hydrogenation for C_6H_6 nucleus 2466, lubricating oils 2467, isomerization of 1-hexene 3098, synthetic fuels 3099, petroleum 3100, 3101, isoparaffins with $AlCl_3$ 3102, catalytic cracking 3103
Catalysts 541.128
Cr oxide, magnetic susceptibility 276, electron microscope study 2015, X-ray and electron examination 2592, surface area 3097
Poisoning 541.128.5
theo. study 353, fungistatic action 1077, Ni by water vapour 2468, Ni, oxygen absorption 2469
Cataphoresis 537.363
of animal parasites 250, casein separation 980, aluminosilicates 2500, denatured egg albumin 2773, direct conductivity measurements 3014, casein fractionation 3019, human plasma analysis 3117
Causality 530.16
laws of nature 94, quantization 95, 96, exp. and deduction 97, indeterminism 1681
Cellulose 661.713
deg. of polymerization 119, alkali solubility 884, by-products 1157, α-cellulose from wood 1158, viscometric chain length 1280, viscosity 2170, 2171
Centrifugal force
Terrestrial 531.565
weight loss by rotation 1692, 1693, gravitational ground-speed indicator 1694
Centrifuges 621.928.3
for electron miscoscope 1100, tube agitator 2495
Change of state 536.42 *see* Thermal transformations
Charge
Electrostatic 537.214 *see also* Space charge
falling drops, Wilson's theory 2043, on unclosed conducting layers 2293, charge on sprayed liquids 3013
Chemical analysis 543/545 *see also* Gas analysis; Mass spectrometry; Spectrochemical analysis
Adsorption 545.844
stearic and oleic acids 169, aromatic and mono-olefin hydrocarbons 2559
Inorganic 543/545
NH_3 in plating baths 378, Sn in non-ferrous metals 1127, sulphamic acid in Cu estimation 2538, arc-weld constituents 2544
Micro-analysis 545.83
As, photometric calibration 165, in clinical labs. 2558
Organic 543.8
total N in proteins 2529, aniline point det. 2536, haematin test 2946, *cyclo*pentadiene, calorimetric det. 2996, human plasma analysis 3117

Chemical analysis—*contd.*
Potentiometric 545.37 *see also* Electrochemistry
carbonyl compounds 379, soil corrosion 702, in gingival crevices 743, nitrate 1128, CO_2 reduction 1129, H-clays 1572, appl. of Ilkovič equation 2539, V oxidation states 2540, vitamin C 2541, hydrocarbon oils 2542, Cu in Cu proteins 2543, Pt metals 3116
X-ray 545.824 *see* X-ray examination
Chemical equilibrium 541.121/.123 *see also* Exchanges
butene-1 and -2 1123, N and S isotopes 1937, butane and pentane isomerization 3095
Binary systems 541.123.2
acetic-acid—NH_3 330, P_2O_5—2 $CaO.P_2O_5$ 670, CO_2 over NaOH and Na_2CO_3 solutions 1801, phenols in C_6H_6, dimerization 2443
Ternary systems 541.123.3
$AgBrO_3$–$NaBrO_3$–H_2O 331, $Ba(BrO_3)_2$–$Ba(ClO_3)_2$–H_2O 333, Al–Cu–Mg 671, Na_2CO_3–$Na_2B_4O_7$–H_2O 3090
Quaternary and higher systems 541.123.6
CaO–Al_2O_3–$CaSO_4$–H_2O 1050, CaO–Al_2O_3–$CaSO_4$–K_2O–H_2O 1051, CaO–Al_2O_3–$CaSO_4$–Na_2O–H_2O 1052
Chemical laboratory practice 542.3/.7 *see also* Agitation; Distillation; Laboratory apparatus
paper filtration rate 1018, removal of gas nuclei 1580, Al_2O_3 air drying 2532, systematic extraction 2808, storing HCN 3114
Chemical processes 542.3/.9 *see also* Chemical laboratory practice
oxidation of cyclic compounds 2461, gel formation 2534, fire extinction 2535, vapour phase dehydration 3115
Chemical structure 541.6
paraffin phase transitions 227, complex Al salts 560, large molecules, electron mobility 641, covalent linkages 700, isocyanates 899, starch-iodide complex 1573, hydrocarbons, additive properties 1761, boron hydrides 2513, $(Me)_2O$–BF_3 2516, pentammine cobalti 2517, oil fuels 2518, copolymers 2519
Electrical and magnetic relations 541.67
glycine, pyridine betaine 239, dielectric polarization 240, quinones, mag. susceptibility 1527
Mechanical relations 541.68
elastic continua 375, aldehydes, nitriles, amines 511, Buna S 701, viscosity, diffusion of polymers 2168, high polymers 2777, glass, stress-optical rel. 2884,
Optical relations 541.65
binary hydrocarbon mixtures 170, absorption spectra 179, β-glucosides 189, pyrrole blue 570, hexamethylene–tetramine 577, linear conjugated systems 906, infra-red spectrum, phenylacetylene 1415, infra-red spectra, acrylonitrile and perbunan 1416, ultra-violet spectra, polyisoprenes 1420, mononitronaphthylamines 1422, proteins and colloids 1423, phosphorescence 1425, triterpenoid compounds 1436, absorption spectra, effect of solvents 1578, glucose monothioacetals 1579, spiropentane 2318, glass stresses 2884, cresols infra-red spectra 2922
Thermal relations 541.66
melting of polythene 1472, simple branch-chain acids 2525
Chemistry 54
α-tungsten 382, plastics, properties 759, appl. of infra-red spectra 1394, 1395
Organic 547
paraffin physical props. 2977, new type of reactions 3118
***Cis-trans* isomerism** 541.634
γ-carotene 2521
Civil engineering 624
passive soil pressure 1009, bridge models 1154, appl. of finite differences 1212, road material suspensions 1558, soil mechanics 2148
Climatology 551.58
effect on man 404, Tarim basin 413, Texas 2598
Cloud chambers 539.16.08
meson mass det. 1539, mesotron paths 2373, timing circuit 2374, 2375
Clouds 551.576
optical height determination 2040
Colloids 541.18 *see also* Disperse systems; Sedimentation; Sols
protective action in cancer 364, soil properties 694, electro-optical properties 1434, 2493, viscosity, effect of aggregation 1570
Colorimetry 535.64/.65 *see also* Spectrophotometry
paper 191, empirical equation 192, anomaloscope 925, opacifying properties 929, quantitative data, methods 1437, meters, standards 1438, geometrical solutions of problems 1439, matching distributions 1441, illuminants 1751, surface coatings 1776, natural dye on wool 1777, adsorption colorimetry 2024, fluorescent material 2248, printed spectrum design 2258, Munsell colours, specification 2259, paper testing 2649, fluorescent discharge tubes 2956, blood analysis 2958
Colour 535.6 *see also* Photography
psychophysics 190, tolerance specification 582, standard white MgO 912, geometry of colour space 923, 924, colour specificity of tissues 926, dye brightness 927, fur hair pigments 928, chromatic colour space 1442, drying oils 1443, photocell response 2257, soils 2260, electron-microscopy of pigments 2261, general survey 2955, analytical representation 2957, haloes, monazite in quartz 3121
Colour vision 535.73/.75
monochromatism 195, response fluctuation 196, anomaloscope 934, Stiles–Crawford effect 935, 1451, abs. photopic sensitivity, u.v. and visible 1152, 1153, retinal zones 1448, protanopic to normal relation 1449, 1452, adaptometer 1450, trichromatic to dichromatic 1780, modulation theory 1781, fovea centralis 1782, 2265, 2961, fundamental sensations 2962, electrotronus 2963, colour blindness tests 2965, 2966, darkened violet 2967
Combustion *see* Flames; Fuel; Heat of combustion; Inflammability; Reaction kinetics
Comets 523.6 *see also* Astronomical spectra
Wolf I photograph 459, 1942*f* and 1942*g* 1659, Meudon observatory 2701
Compasses 538.74
distant reading gyro-magnetic 2362
Compressibility
Gases 533.21
N_2–CO_2 mixtures 1314, calculation from equations of state 2285
Compton effect 537.531.85
influence of damping 1856, shape of profile 1938
Condensation 536.423
water drop formation 580, 585, steam, drop formation 871, nucleus formation 1724
Conductivity
Electrical 537.311 *see also* Resistance
eggs, high freq. 606, high freq., ionized gas 975, ionized gas in magn. field 2301
Electrolytes 541.133 *see also* Ion velocity
aq. $KBrO_3$ and $NaBrO_3$ 680, $MgCl_2O_8$ in $Pr^{\alpha}OH$ and $Pr^{\beta}OH$ 1088, H_2SO_4 in methanol 1089, TlCl solutions 2300, electrophoretic boundaries 3014, Black Sea water 3015, non-aqueous perchlorate solutions 3105
Thermal 536.2.022 *see also* Heat conduction
water 940, carbon black 1467, gaseous He, low temp 1469
Measurement 536.2.08
gases 1468, liquids 1794
Conformal representation 517.54
calculation of electric or magnetic field 1196
Congruences
Arithmetic 511.22
Tarry's problem 3, Fermat's and Wilson's function 1604, Ramanujan's function 2659
Constants
Atomic 53.081.6
X-ray determination of h/e 89, Planck's constant 490 m/e of current carrier in Cu and Al 973, Rydberg constants, e/m 1821, 1944 values 2289, e, e/m_0, 2371
Contact angle 532.64 *see also* Wetting
blood on metal 251, 2-comp. solid-liq.-vap. 514 Ca-soap–oil 872, apparatus 873, plant and animal surfaces 1720, surface wettability 2184, work of adhesion relation 2802, zero rarity 2803, CH_2I_2 water–air system 2804

Contact potential 537.221
silica/KCl, interface 1298, rubber 1825, uniform double layer 2292
Convection 536.25 *see also* Heat transfer
general theory 2271, in porous medium 2973
Copper 669.3
spectrochemical analysis 1767
Corona
Solar 523.755
theory, nuclear reaction 464, polarization 1660, radiometric observations 1661
Correlation
Mathematical 519.272
matrix factoring 19, matrix rank 20, appl. of Mehler's identity 1609, interaction formulae 2105, familial correlations 2106, regression lines 2107, recent work 2702
Correspondences
Algebraic
transversality in *n*-space 1190, point-curve 2666
Cosmic dust 523.161
Na lines 457, smoke particles in interstellar gas 2113
Cosmic rays 537.591
photographic recording 623, atom annihilation rays 624, 987, diurnal variation 629, 1531, hard component absorption 989, Carnegie Instn. Committee 1873, 1874, He-annihilation rays 1876, energy spectrum 1878, mass measurement 1881, azimuthal variations 1888, directional distrib. time variations 1889, ionization, relativistic increase 1890, 1891, ionization 2329, symposium 2330, soft component 2331, 2332, 2333, influence of solar eclipses 2334, effect on radio-wave propagation 2342, absorption of soft component in H_2O 2343, fluctuations 2344, directional distribution 2345, temperature effect 2346, hard component latitude effect 2347, 2348, kin. relativity theory 3051, Bristol conf. 3052, Col du Lautaret obs. 3053, absorption, Colombo and London 3054
Apparatus
G–M counter discharge fluctuations 1523, ionization chamber 1880, high resolution amplifier 2341
Mesons
disintegration 269, Rossi 2nd max. 270, single, production 271, electron/meson ratio 625, alt. and lat. variation 628, 2349, ionization in H_2 630, calculation of mass 645, slow-meson intensity 986, soft radiation on collision 1525, mass 1539, 3049, average life 1875, momentum spectrum at 4·35 km 1877, sp. ionization 1880, multiple production in paraffin 1886, high-altitude production 2335, paths 2373, low-energy spectrum 3050
Showers and bursts 537.591.15
cascade equations 67, cloud chamber photographs 268, in Pb 626, 627, transition effect 988, barometer effect 990, 991, 1524, burst-shower correlation 1522, bursts, distribution 1879, obs. in Brazil 1882, extensive penetrating 1883, high-density 1884, 1885, in stratosphere 1887, under clay 2337, theory of spread 2338, cascade 2339, 2340
Cosmogony 523.1
time scales 81, 799, recession constant 1654, star accretion mechanism 1656, relativity field equations 1676, spin in the universe 1680, red-shift formula 2111, new approach 2696
Counters *see* Ion counters
Counting circuits 531.791
quenching 291, low-impedance circuit 1272, const. resolving time 1537, high resolution amplifier 2341
Creep strength 539.434
glass 323, rubber 1991, temperature and humidity, tire cords 2076, moulded phenolic plastics 2423
Critical constants
Thermal 536.44
correlations with parachors 1479, hydrocarbon critical sol. temp. 1480
Crystallization 532.78
soap system 523, Ca stearate 1106, sucrose solutions 1309, 1310, Pb–Sn precipitation 2812, 2813
Crystallography *see also* X-ray crystallography
Mathematical 548.1
space group character tables 2569
Crystals *see also* Diamonds; Quartz
Electrical properties 548.0 : 537
piezo-electric constants 1833, NH_4Cl permittivity 2983
Crystals—*contd.*
Electron microscopy 548.74
sulphur compounds 397, crystal forms 2028, interference phenomena 2029, MgO particle size 2030, contact catalysts 2592
Etching 548.574
effect of u.v. 160, quartz 386, 3123
Growth 548.5
recrystallization, probability 1131, pearlite 2405, $NaNO_3$ oriented sections 2572
Lattice dynamics *see also* Solids
Kirkwood's theory 390, co-operative phenomena, theory 639, covariant theory 705, *Td* class diamond 707, superlattices 1686, 2575, lattice interaction energy 2743, non-ideal, infra-red behaviour 3120
Magnetic properties 548.0 : 538
molybdenite 1896, $KMnO_4$ 1901
Mechanical properties 548.0 : 539
free vibrations 530, supersonic testing 706, brittle strength 2433, shear modes 2560, piezo-electric elastic constants 2564, 2565, 3122, quartz etching appl. 3123
Molecular structure 548.7
$NiCl_2 . 6NH_3$, $NiBr_2 . 6NH_3$, $NiI_2 . 6NH_3$, space groups 385, "fly's eye" synthesis 393, template for models 2158, Fourier transforms 2568, diamond, 4 structures 2571, optical Fourier synthesis 2596
Optical properties 548.0 : 535
Darwin–Prins formula 610, light scattering 2562, naphthalene fluorescence spectrum 2941, interferometry appl. 2948, ipral derivatives 3119, non-ideal lattices in infra-red 3120, haloes in quartz 3121
Structure 548.0 *see also* Isomorphism; Polymorphism
particle shapes 2567
Thermal properties 548.0 : 536
iodine 383, sp. ht. calculation 384, diamond, expansion 583, 943, sp. ht. and vibrations 584, 591, sp. heat, halides 593, sp. ht., Si 594, thermal transitions 2563, hysteresis in NH_4Cl transition 2984
Twinning 548.24
etching figures 386, α-quartz, terminology 2573
X-ray analysis *see* X-ray crystallography
Curves
Algebraic
Plane 513.61
cubic 27, cubic, rational points 28, Klein's quartic 29, expansion of co-ordinates 1612
Twisted 513.65
universal, on quartic surface 30, invariants 31, Segre's theorem 32, curvature form 35, invariants of webs 778, multiple 2664
Cutting 621. 93
mechanics of metal cutting 500, 2419
Cytology 576.3
equations of growth 59, bio-electric potential 231, sensitivity to X-rays 261, effect of γ-rays 2377, 3070, cell dia. meas. 2761
Damping
Vibrations 534.37
d.c. driven marine propellers 1341, heat-treated steel 1554, alloys, dependence on stress 2420, aircraft gyroscopes 2844
Deformations 539.37/.39 *see also* Bending; Elasticity
stresses in punched plate 1621, shrinkage in welding 2400, optical distortion tester 2411
Densitometry 771.534.531.5/.6
astronomical 456, symposium 693, in spectrographic anal. 704, in X-ray crystallography 712, direct reading meter 2654
Density *see also* Vapour density
Liquids 532.14
sulphamic acid and salts 116, rel. to viscosity and conc. 118, parachors, alcohols and hydrocarbons 371, aldehydes, nitriles, amines 511, aq. $KBrO_3$ and $NaBrO_3$ 680, isocyanates 899, hydrocarbon mixtures 1284, hydrocarbons 1761, Si chlorobromides 2782
Density measurement 531.75 *see also* Vapour density
KCl 504, road materials 2160
Diamagnetism 538.113
H-bond relations 632
Diamonds 549.211
thermal expansion 211, 943, elastic consts. 310, fluorescence spectrum 571, Raman spectrum 576, 1427, normal oscillations 707, industrial appl. 713, infra-red spectrum 1419, 3134, rectifying props. 1836,

Diamonds—*contd.*
X-ray reflection 2308–2310, 4 possible structures 2571, allotropic modifications 3133
Dielectrics 537.226
Measurement
correlation of phenomena 233, resonant-cavity methods 2294
Properties
polar polymers 234, *m*-cresol resin 236, glycine, pyridine betaine 239, polynitro compounds 240, lac 601, dehydrated carrots 602, CCl_4, breakdown 609, organic liquids, absolute values 1506, glass, short-wave 1507, dammar and mastic resins 1828, natural resins 1829, β-lactoglobulin 1830, carnauba wax 1831, organic fluids, dispersion 2295, printing inks 2498, NH_4Cl at transition 2983, 2984, titanates 3009, neoprene gum 3010
Theory
dipolar solids 232, 235, 237, correlation of phenomena 233, dipolar ions in mixed solvents 238, dipolar solids 241, molecular concepts 599, organic substances, theory 600, dipole liquids 1923
Differential equations 517.9
higher space paths 58, equations of growth 59, Van der Pol type 60, collocation 1198, asymptotic solutions 1624, electrical and aeronautical problems 1625, regulation, damping 1626, solution by equiv. circuits 2095
Linear 517.94
Sturm–Liouville expansion 49, Fuchsian, singularities 61, Mathieu eq., appl. 102, Fuchs' theorem 1199, numerical solution 1200, periodic coefficients 1201, solutions of $\Delta_3 U = U$ 2097
Partial 517.944/.945
integration theory 62, stress problems 63, $\Delta u + \lambda k(x, y)u = 0$ 64, Laplace's equation for 2 spheres 65, reaction kinetics, ion exchange 788, plasticity problems 1203, relaxation methods 1204, punched-card solution 1205, solution of $\nabla^4\Phi = 0$ 1621, classification 1627, regulation stability 1628, vibration of elastic beams 1629, wave equation 1630, telegraphic equations 2096, electromagn. theory 2855, heat conduction 2971
Differential geometry
Surfaces 513.735
Darboux pencil 26, projective geometry 37, non-holonomic 38, scale lines 431, 432, tangeodesics 433,
Diffraction
Light 535.42 *see also* Scattering
aluminized glass gratings 579, electromagn. waves 634, by small holes, Bethe's theory 1530, theory, concave grating 2949, metal stress 3087
X-rays 537.531 : 535.4 *see* X-ray diffraction
Diffusion
Gases 533.15
emanation method 292, 293, spherical shells 1311, inert gases through high polymers 1312, slip along a wall 1731, fumigants, in wheat 2815, effect of pressure 2816
Light 535.36 *see also* Scattering
diffuse reflection factor 1773
Liquids 532.72
thermal 140, membrane permeability 141, 517, alkyl sulphonic acids 881, statistical treatment 1216, coeff. of self-diffusion 1279, measurement, virus 1305, in spherical shells 1311, vapour into keratin fibres 1727, high polymers, molecular flexibility 2168, conc. sucrose solutions 2188, microdiffusiometer 2189, surface tension–time relation 2796
Dimensions 53.081.5
discussion 835
Dipole moment
Molecular 539.133
trioxene 284, pyridines 1535, di-hydroxy benzenes 2364, sex hormones 2365, co-ordinate links 2366, $CH_3CN : BF_3$ 2515
Discharge
Electric 537.52 *see also* Arcs; Sparks; Sputtering
active nitrogen, afterglow 256, 257, h.f., gas dissociation 608, effect of magn. field 981, disintegration of plasma 2303, N_2O and H interaction 2305, electron temps. 3021, Townsend characteristics 3022, low-potential 3024, cathode dark space 3025
Discharge—*contd.*
Electric—*contd.*
Joshi effect
light effect in Cl 982, 2217, light effect 983, 2306, 2307, effect of X-rays 1847, h.f. 2304
Discharge tubes 537.54
cyclotron arc ion source 2328, 3071, colour characteristics 2956, pool cathode for low-current arc 3046
Disperse systems 541.182 *see also* Colloids; Emulsions; Foams; Gels; Sols
thixotropy, theory 365, tobacco mosaic virus 695, 696, soaps, foam stability 876, aerosol research 1102, printing pigments 1103, bentonite solutions 1283, prep. of pigment specimens for electron microscope 2022, 2023, cellulose nitrates 2497, thixotropy of printing inks 2498
Dissociation
Electrolytic 541.132 *see also* Exchanges; *p*H
weak acids 354, Raman effect study 679, activity coeff., $NaBrO_3$ and $KClO_3$ 879, activity coeff., metal halides 880, H_2SO_4 and bisulphates 1079, butylamine, piperidine, triethylamine 1081, ionization const., H_3BO_3 1082, SO_2 in methanol 1084, chloride ions in HCl and KNO_3 1092, $Ce(SO_4)_2$ spectrophotometry 2224, TlCl solutions 2300, diffusion of ions 2470, temperature dependence 2471, dissociation minima 2472, energy additivity in glass 2473
Reaction kinetics 541.124.7
H_2O 344, CH_3Cl, energy 1121, enzyme-drug complex 3093
Dissociation energies *see also* Spectra; Molecular structure
H_2O 344, bond energy, CH_3Cl 1121, CO, N_2, NO, CN 2240, $CH_3CN : BF_3$ and $CH_3CN : BCl_3$ 2515, $HgCl_2$ 3001
Distillation 542.48
vacuum, pressure regulation 376, reflux regulator 1126, modified head 2529, petroleum analysis 2545
Doppler effect 534.22
demonstration experiment 154, 1333
Double refraction 535.5 *see also* Photoelasticity; Polarized light
magnetic, some liquids and solutions 636, cellulose film 920, colloids 1434, reflection in calcite prism 1435, electrical anisotropy 1834, Rochelle-electrics, temp. effect 3012
Flow
apparatus 921, Ca-stearate–oil 1106, turbulence detection 2785, zein 2952, flow, measurement 2953, nucleic acid flow 2954
Ductility 539.52 *see* Plasticity
Dyeing 667
fluorescence polarization 188, dye brightness 927, hypochlorite, effect on cotton 1012, mercerizing, fibre changes 1013, oxidation-reduction potentials 1093, emulsion-suspension process 1103, indanthrene methods 1107, pulp, 3 stages 1159, Na_2O_2, mechanical pulp 1160, 1161, starch decomposition by enzyme 1162, temperature effect, rayon 1163, oxyfisetin, fastness on wool 1164, cell-wool, sulphur dyes 1165, mixed fibres, wool and cellulose 1166, formaldehyde-treated "zellwolle" 1167, fastness on wool 1777, woollen articles 2061, Ce–Es process 2067, pretreatment processes 2068, acetate silk, linseed oil 2069, wool fabric 2070, rubber poisons 2071, fur improvement 2072, Orema dyes 2073, viscose rayon 2078
Dynamics 531.3 *see also* Flexible bodies; Kinematics; Pendulum; Projectiles; Rotating bodies
traffic movement 1261, simple system, observables 1688, demonstration laboratory 2754, elastic bar 2755
Earthworks 624.13
flexible foundations 1008, elasticity theory 1029, soil stabilization tests 1589, wedge theory 2062
Eclipses *see also* Occultations
Sun 523.78
effect on atm. electricity 482, Huancayo Observ. 483, ionosphere obs. 1944 832, cosmic rays 2334
Eddy-currents 538.54
ellipsoid, cylinder 633, 2359
Education 37
multiple item test 1, mathematics 1174, engineering 1603, laboratory design 2730

astic hysteresis 539.389.4
invar. 210
astic moduli 539.32 *see also* Stress/Strain curves
Poisson's ratio 307, diamond 310, by sound velocity 313, plastics 657, 658, metals near m.pt. 1028, soil 1029, rubber, low temp. 1991, 1992, reinforced rubber 1993, rigidity measurement 2402, glass 2403, quartz 2404, piezo-electric crystals 2564, crystal ultrasonic method 2565, coals, coeff. of restitution 3084, rubber 3085, non-piezo-electric crystals 3122
asticity 539.3 *see also* Deformations; Elastokinematics; Fatigue; Relaxation; Stresses
polar polymers 234, basic concepts 306, test interpretation 308, crystal lattice stability 705, equivalent electrical circuits 842, 843, extreme pressure 1026, 1990, model rubber-like materials 2060, fast stretching of rubber, temp. rise 2406, damping capacity, alloys 2420, elastic bar 2755
Liquids 532.123
tensile strength of water 870
Theory 539.31
particular solution 656, rubber 1027, rubber, thermodynamics 1815, rubber with filler 2008, 2009
astokinematics 539.312
forced torsional oscillations of elastic half-space 528, rubber, retraction 1690, 2003, wave equation 2407
ectric fields 537.212 *see also* Field theory; Potential
produced by revolving charges 230, e.m.f. and p.d. 1528
Effects 537.228 *see also* Electro-optical effects; Piezo-electric oscillations
semi-conductors, conductivity 246, 247, h.f., on viscosity 1276
ectrical instruments 537.74 *see also* Electroscopes; Voltmeters
temperature compensation 2277
lectricity
Theory 537.1 *see also* Field theory
carrier inertia in Cu and Al 973, point charges, self-energy problem 1819, creation of charge 1820
lectrobiology 537.1
bio-electric potential 231, as pathogenic agent in nervous system 242, cytolysed Paramecium, conductivity 243, human skin resistance 245, 249, 605, blood clotting 251, nerve cell frequency alteration 252, electronarcotic action 253, stored eggs, h.f. resistance 606, explanation of nerve action 1550, human body resistance 2350, functional polarity 2637
lectrochemistry 541.13 *see also* Electrolysis; Chemical analysis; Oxidation; Reduction
diffusion potentials, $K_3Fe(CN)_6$ and $K_4(CN)_6$ 1078, silicic acid sols. 2016
lectrodynamics 538.3 *see also* Eddy currents
e.m.f. and p.d. 1528, forces between moving electrons 1904, stationary electron swarms 2314, pinch effect 2356
lectrolysis 541.135 *see also* Conductivity; Dissociation; Ion velocity; Polarization
nitroparaffins 681, fused Al halides 682, periodic currents 2479, azide ion deposition 2480
Electrodes 541.135.5 *see also pH*
dropping-Hg, capillaries 132, Pd and Pt 356, Hg, diffusion current 1091, microcalomel 2481, membrane equilibria 2482
Electromotive force 541.134 *see also* Oxidation; Reduction
calomel half-cell, HCl, KNO 1092, oxidation-reduction potentials, dyestuffs 1093, over-voltage in H_2SO_4 and H_3PO_4 2478
Electromagnetic oscillations 538.56
in gapped cylindrical cavity 3062, in ellipsoidal cavity 3063
Electromagnetic waves 538.56 *see also* Light
diffraction by hole 634, 1530, in tube with 2 dielectrics 635, angular momentum 1908, in bent rectangular pipe 1909, 160 Mc/s cosmic "noise" 2112
Propagation 538.566
ionosphere, region of rapidly changing collision frequency 975
Radiators
multipole radiation 1529, reciprocity theorem 1907, "induced e.m.f." methods 2358
Electro-optical effects 537.228
colloids, birefringence in a.c. field 1434, 2493, anisotropy of xerogels 1834, depolarization of scattered light 2299, Rochelle–electrics 2301
Electron diffraction 537.533.73 *see also* Scattering
molecular dimensions measurement 998, 999, survey 1861, Amer. Soc. for, 1944 report 2311, electric charging of specimens 2317, spiropentane structure 2318, insulating film detection 2319, camera screen and plate holder 2320, refraction effects 3042, molecular structure 3073
Electron emission 537.533 *see also* Photo-electricity; Thermionics
electron multiplier 618, enhanced thermionic 1866, auto-, thin dielectric films 1867, pyrex glass secondary 3044
Electron microscope applications 537.533.72 *see also* Crystals
dextran, levan molecules 283, principles and limitations 897, centrifuge specimens 1100, cellulose fibres 1544, tooth structure 1857a, Amer. E.M. Soc., meeting 1860, prep. of pigment specimens 2022, 2023, muscle fibrils 2059, 3138, pigments 2261, corundum 2315, cellulose nitrate precipitates 2497, haemocyanin molecules 3038, carbon blacks 3039, medical 3040, battery materials 3041
Electron optics 537.533.72 *see also* Space charge
trajectory computation 263, ray tracing, magnetic lens 264, β-ray spectrometer 265, velocity analysis of electron-microscope electrons 615, electron velocity analyser, magnetic defl. 616, electrostatic immersion lens 617, multipliers with magnetic focusing 618, rolling-ball model 974, historical review 1519, network analysis of trajectories 1858 1859, Amer. Electron Microscope Soc., meeting 1860, mass spectrographs 1868, focusing by electron clouds 2314, lens fig. of merit 2316
Electrons 537.122 *see also* Beta rays; Scattering; Space charge
point electron theory 1822, radiation field 1823, self energy 1824, Larmor's theorem 1857, pair formation in electron field 1865, penetration in matter 2291, stationary swarms 2314, radiation, classical theory 3007, "temperature" in discharges 3021, "phase velocity" 3037
Secondary effects 537.533.8 *see also* Electron emission
Cerenkov radiation 619, photon production 1350, Ni atom *K*-ionization 1864, pair formation 1865, Bremsstrahlung 2376
Electroscopes 537.742.2
for soft radiation 650
Electrostatics 537.2 *see* Charge; Contact potential; Electric fields; Potential
ten 2-dimensional problems 3008
Emulsions 541.182.4 *see also* Disperse systems
Mona wax agent 135, 697, of drugs, preparation 2496
Energy levels *see* Molecular structure; Spectra
Entropy 536.75 *see also* Thermodynamics
definition 228, sat. liquid-vapour mixtures 2286
Properties of substances
alkali halides 214, Mg, Ca and Ba nitrates 220, trimethylamine 589, CCl_4 592, KH_2PO_4 953, KH_2AsO_4 954, $(NH_4)H_2PO_4$ 955, $(NH_4)H_2AsO_4$ 956, $Ag_2H_3IO_6$ 957, nitrates of Ng, Ca, Ba and Al 959, Fe and Mg chromites 960, 961, some aq. ions 969, $Gd_2(SO_4)_3 . 8H_2O$ 1809, rubber, in solution 1816, *trans*–2–butene 2281, 1,3-butadiene 2974
Enzymes 577.15
energy of reactions 2450, dissociation constants 3093
Equations 512.25 *see also* Differential equations
Functional 517.948
Lambert series 51, log derivative of $\Gamma(z)$ 1207
Indeterminate 511.5
arctan equations 11, rational solutions 1178, trinomial congruences 1179, finite field theory 1180, Euler's 3-biquadrate problem 2082, $2^x - 3^y = 2^X + 3^Y$ 2661, solution of trinomial equations 2662
Integral 517.948
numerical solution 66, cosmic radiation 67, non-linear, solution 789, continuous dynamical systems 1206, Hermitian operators 1208, 1209, operator iteration 1210, 1211, weir-form theory 1293, Hammerstein's equation 1631, generalized Fourier series 1632, approx. solution, scattering problems 2683

Equations—*contd.*
Linear 512.25
matrix solution 776, escalator process 1182
Theory 512.3/.4
irreducibility 12, complex roots 14
Equations of state 536.71 *see also* Thermodynamics
calc. of lat. ht. of vap. 1493, thermal expansion, compressibility, calculation 2285
Equilibrium *see also* Floating bodies
Liquids 532.2
electrical level indication, totalizing 864, regulating reservoirs 1285
Exchanges
Chemical 541.123.5
cation exchange column, math. description 788, CsCl + KBr 1048, halogen–hydrogen 1049, ions, reaction velocity 1061, 3096, exchange resins, water treatment 1080, H_2SO_4-treated coal 1083, zeolite water-softeners 1085, ion exchange, resinous 1086, colloidal S 1110, hydrous oxide sols, prep. 1111, clay salts, effect of *p*H 2017, organic ion exchange 2445, H^+, Al^{+++} and Fe^{+++} from clay soil 2446, resinous water-softeners 2477, N, S isotopes 3068
Fatigue
Elastic 539.431 *see also* Relaxation
metals, thermal 319, failure conditions 321, welded steel 322, shot peening 2012, statistical theory 2421, rubber 2422, X-ray diffraction study 2591
Fibres 539.216.1 *see also* Textiles
separation by flotation 1011, cotton, effect of chloramine 1012, mercerizing 1013, paper pulp, wt. 1014, keratin, action of formaldehyde 1015, collagen, fibre-axis period 1024, cellulose, electron microscopy 1544, human hair 1545, fineness measurement 1697, sorption of vapour 1727, wool, setting 1973, electron-microscope exam. 1974, collagen fine structure 1975, "zellwolle" and wool 1976, natural and artificial, fine structure 1985, scaliness measurement 2383, protein, diffraction studies 2384, cotton, tensile behaviour 2385, irregularity in yarns 2386, 3075
Field theory *see also* Nucleus; Relativity
quantum mechanics of pure fields 90, 1678, spinor representations of rotation 92, divergence difficulty 286, Dirac's quantum electrodynamics, radiation damping 489, field quantization, new method 1230, 1231, 1232, quaternion combinations 1241, Lorentz transformation group 1242, autonomous 1683, Dirac's theory 2357
Fields
Mathematical 519.4
double exponential sums 5, principal-ideal theorem 79, rings 455, finite, theorems 1180, solution of trinomial equations 2662
Films
Liquid 532.62 *see also* Oiliness; Surface tension
attractive energy of solid 368, dilauryl maleate and fumarate 513, equation of state 516, water drop formation 580, spore discharges 870, steam, drop formation 871, evaporation through monolayers 947, egg albumin monolayers 1299, β-lactoglobulin monolayers 1300, albumin and lauryl sulph. monolayers 1301, pressure balance 1302, adsorption isotherms 1303, phase changes 1304, water flowing through cracks 2185
Solid 539.23 *see also* Optical films; Sputtering
amylose, starch 1021, thickness measurement 1433, metal-spraying 1548, abrasion resistance 2390
Finite differences 517.949
reciprocal differences 68, asymptotic solutions 443, calculation of strain 846, influence function 892, appl. to concrete abutments 1212, appl. to bending moments 1250
Fire extinction 614.84
effect of chemicals 2535
Flames 536.46
steel making, flame quality det., control methods 1169, flame gas abnormality 1481, stability and structure 1803, propagation 1804, non-luminous gases 2275, cool-flame ignition in ether 2276
Flexible bodies
Motion 531.391
stability, periodic force 102, speed of retraction of rubber 1690
Floating bodies
Stability 532.32
self excited oscillations 889, body in incompressible fluid 1286
Flocculation 541.18.041.2 *see* Sedimentation
Flotation 532.69
ergot from rye 133, separation of fibres 1011, low-grade fuel recovery 1723
Flow
Liquids 532.5 *see also* Double refraction; Hydrodynamics; Turbulence
2-dimensional, past solid 121, 2 orifices in series 122, body in shear flow 123, through cracks 512, parallel flows 865, asymptotical theory 1289, integral theorems 1709, images in irrotational flow 1710, fluid shearing motion 1712, oil and gas through pressure media 2177, flow orientation 2784, very narrow channels 2789, through foams 2806, zein birefringence 2952, 2953, 2954
Pipes 532.54
critical height of drains 124, area/vel. ratio 868, friction factors 1294, backwater function 1714, turbulent 2790
Flow measurement 532.57
electronic recording 1295, impact tube 1715, electromagnetic measurement 1716, cross-transfusion, blood 2178, steam boilers 2179, valve meters 2791, Venturi-meter coefficient 2792
Fluorescence 535.37 *see* Luminescence
Foams 532.694.1 *see also* Flotation
stability, measurement 875, stability, soaps 876, steam generation 1724, chemical defoamers 1725, partially-foamable solutions 2186, liquid drainage 2806
Forms
Algebraic 511/512
quadratic, decomposition 9, 10, coeff. tables 21, lattice points 24, orthogonal and symplectic groups 1185, Ramanujan's function appl. 2659, minima 2660
Fourier series 517.512.2
conjugate series 46, summability 47, 48, harmonic analysis circuit 437, photo-electric analyser, synthesizer 438, elastic boundary-value problems 497, elasticity problem 1615, X-ray scattering 1853, crystal structure factor 2568, Lebesgue constants 2674, circuit calculation 2675
Fractions
Continued 511.7
expansion of power series 1607
Free energy 536.77 *see* Thermodynamic potential
Freezing 536.421.4 *see also* Melting
ground ice formation 724, ice-formation rates 1800
Friction 539.62
ball and roller bearings 502, mechanism 1039, pivot bearings 1040, instrument oil 2437, transformations in steel 2438
Fuel 662
research 744, coal plastic characteristics 2429, detonator initiating efficiency 2455, petroleum catalysis 3100, oil stability testing 3140
Functions
Complex variable 517.53
Lambert series 51, inequalities 52, infinite integrals 54, $\tanh(x + iy)$ 425, residue theory 440, functions def. by Taylor series 441, max. mod. of derivation 1195, hyperspherical harmonics 1618, exponential-pulse analysis 2837
Theory 517.5/.8
problem of moments 45, Riemann zeta 55, Hermite polynomials 56, functions based on cycles 777, translation span in Lebesgue space 785, Watson transform 786, commutative functions 1614, solution of $\nabla^4\Phi = 0$ 1621, properties and applications 2093, integrals 2094
Fundamental particles *see also* Quantum theory
pure fields 90, field theory 286, radiation damping 489, photons 495, theory of point-particles 840, 841, field quantization, new method 1230, 1231, 1232, photon and meson 1235, non-conservative 1536, zero rest-mass particles 1630, interacting fields 1678, autonomous field 1683, discontinuous motion of electric particle 1905, particle of spin $\frac{3}{2}$ 2142, 2747, particles of arbitrary spin 2144, excited spin states

undamental particles—*contd.*
2145, Dirac's notation 2357, variable-spin particles 2744, 2745, protons and neutrons 2749
urs 675.6
colour effect of hairs 928, dyeing 2072
usion 536.421.1 *see* Melting
Gamma rays
Absorption 539.166 *see also* Nuclear excitation
absorption in Pb and Cu 1003, 1956, 1957, Ra-content meas., correction 1943, nuclear resonance 1954, Ra (B + C), measurements 1958
Biological action 539.166.94
virus inactivation 260, broad bean root 262, carotene, vitamin A 1961, cell degeneration 2377, malignant cells 3070
Spectra 539.163.2
high energy, Y, 1002, $Sb^{124} \rightarrow Te^{124}$ and $Na^{24} \rightarrow Mg^{24}$ 1950, U I 1951, Be, proton bombardment 1952, Sb, transition 1953, RaD→RaE by β rays 2378
Gas analysis 545.7
He in air 380, Rayleigh interferometer 1431, arc-weld constituents 2544, in crude petroleum 2545
Gauges 531.71
taper and tension 855, bench micrometer for gear teeth 1696, microptic machine 2153, calibration 2157, template for crystal models 2158, electric gauge amplifier 2164, r.f. apparatus 2760
Gears 531.39
loading 2757, load distribution 2758
Gels 541.182.5. *see also* Colloids
sol-gel transformation 223, gelatin, size distribution 1104, absorption spectra 1423, irradiation of rubber 1701, electrical anisotropy 1834, wheat gluten 2499, aluminosilicates 2500, in addition polymerization 2534, silica-alumina gels 3108
Geochemistry 550.4
soil gas, N_2O 1138, N.Z. rock radioactivity 2034
Geodesy 526 *see also* Gravity
displacement of Earth's surface 723
Geology
Economic 553 *see also* Soils
clay particle size 299, British underground water resources 402, symposium 417, Fort Collins hydrocarbon survey 418, Texas, soils and climate 2598
Geometry 513
space concept 22
Non-Euclidian 513.81 *see also* Differential geometry
line, Riemann tensor 34, projectivities on a line 40, Weyl geometry 41, unitary geometry 42, Riemannian, parallelism 1191
Geophysical prospecting 550.83
salt-dome 2615
Electrical 550.837
a.c. current instrument 2619, working depths in l.f. measurements 2620
Gravimetric 550.831
Arkansas bauxite region 400, chromite gravimeter 2616, interpretation of results 2617
Magnetic 550.838
Arkansas bauxite region 400, Puhipuhi plateau 2032
Seismic 550.834
a.m. and f.m. communication 722, Cayuga Field 1139, misinterpretation 1140, index of wells shot for velocity 1141, reflection seismograph exploration 2618
Geophysics 550.3
Carnegie Instn report 2599, escaping gas, thermodynamics 3002
Glass 666.1/.2
creep resistance 323, laminated, strength 1010, porosity of sillimanite 1016, surface tension of melts 1297, viscosity 1708, synthetic sapphires 2066, elastic properties 2403, brittle rupture 2434, energy additivity 2473, stress-optical coeff. 2884, refractive index–temperature relation 2885, temp. distribution 2970, secondary emission 3044, mechanical strength 3088
Optical 535.81
molecular aggregation 581, standards for spectrophotometry 1456, appearance defects specification 1457, 1783
Goniometry 531.74
appl. in crystal analysis 2588
Gramophones 534.85 *see* Sound reproduction
Gravitation 531.51 *see* Relativity
Gravity 550.312 *see also* Geophysical prospecting
interpretation of anomalies 1136
Measurement 526.7
modified Atwood machine 103, International formula 2138
Group theory 519.4
S-groups 78, non-invariant operators 453, 794, group ring 454, projective collineation 792, automorphism 793, orthogonal and symplectic invariant theory 1185, sets of conjugate operators 1220, symmetric group 1648, combinatorial theory 2110, character tables, crystals 2569, sets of subgroups 2693, Sylow's theorem 2694
Gunnery 623.5
sighting A.A. guns 105, appl. physics 834
Gyromagnetic effect 538.242
Barnett effect 995
Gyroscopes 531.383
electrically driven 101, 850, gyro compass 501, tank-gun stabilizer 851, principles, applications 1263, distant-reading compass 1264, 2362, gyrosyn compass 1265, action-reaction 2756, tachometer-accelerometer 2767, damping cylinders 2844
Halos
Optics 535.348
monazite in quartz 3121
Hardness 539.53
steel, tests, specifications 1038, analysis 1559, thermosetting laminates 1560, corundum 2013, porcelain balls 2431, paper, erasing quality 2432
Harmonic functions 517.544.2
heat conduction 53, isothermal families 1619, electrostatics 3008
Hearing 534.75
cochlear response 156, microphone effect 541, blast deafness 543, hospital rehabilitation scheme 741, testing assembly 1346, auditory acuity 2851
Hearing aids 534.773
acoustical amplification 544, measurements 545, body baffle 546, field response 547, air and bone-cond. 548, sound filtration 549, electrical 550, performance prediction 551, electro-acoustic 1347, deaf-aid amplifier 2852
Heat capacity 536.63 *see also* Specific heat; Thermodynamic properties
Mg, Ca and Ba nitrates 220, $N(CH_3)_3$ 589, KH_2PO_4 953, KH_2AsO_4 954, $(NH_4)H_2PO_4$ 955, $(NH_4)H_2AsO_4$ 956, $Ag_2H_3IO_6$ 957, Fe and Mg chromites 961, Mg and Ca fluorides 1487, methylamine hydrochlorides 1489, polythene 1490, gaseous 1, 3-butadiene 1491, 1492, *trans*-2-butene 2281, Na silicates, high temp. 2439, Mn, high temps. 3004
Heat conduction 536.2 *see also* Conductivity; Heat transfer; Insulation
Green's function 53, composite rod, by method of wave trains 151, infinite medium heated by cyl. 207, two concentric spheres 939, diffusion in spherical shells 1311, h.f. cables 2146, thin plates 2270, semi-infinite cylinder 2971
Heat engines 536.8 *see also* Thermodynamics
gas-mixture dissociation 598, efficiency 971, gas turbines 972, efficiency of cycles 1504, adiabatic refrigerator 2288, energy charts 3006
Heat insulation 536.2
effect of thermal short-circuits 938, for intermittent operation 1791, buildings 1793
Heat measurement 536.62 *see* Calorimetry
Heat of combustion 536.662
substituted eicosanes, heneicosanes and docosanes 963, hydrocarbons 964, 1498, 1,3-butadiene and styrene 1495, benzoic acid, graphite 1496, aromatic hydrocarbon 1497, polynitroparaffins 1812, C_9H_{12} alkylbenzenes 2997
Heat of reaction 536.66
$Mn(NO_3)_2 \cdot 6H_2O$ formation 224, Mg, Ca and Ba nitrates formation 225, $Al(NO_3)_3$ formation 226, H_2O dissociation 344, natural gas, heating value 952, β,β-dimethylacolein hydration 1067, liquid hydrocarbon production 1484, CO_2 formation, graphite-diamond 1494, 1,3-butadiene and styrene, formation 1495, octane isomerization 1499, paraffin hydrocarbons formation 1810, alkali palmitate transition

Heat of reaction—*contd.*
1813, K and KAl sulphates formation 2282, pyrolysis of iodides 2460, cyclopentadiene 2996, C_9H_{12} alkylbenzenes isomerization 2997, Al_2O_3 formation 2998, ammonium sulphates formation 2999
Heat transfer 536.24 *see also* Convection; Heat conduction; Temperature distribution
dehydration of prunes 206, circulating systems 936, paper-making machinery 937, boiler tubes, oblique radiation 941, gaseous He, low temp. 1275, flowing gas, with tube walls 1315, granular matter 1790, with liquid slab in contact 1795, rate correction, multi-pass exchangers 1796, flat plate in gas stream 2828
Heat treatment 66.04 *see also* Mechanical strength
drying, physical mechanism 1156, radiant heat baking of enamels 1482
High-pressure effects 539.893
stress/strain 1026, 1990
Histology 576.7
tissue differentiation 926, uptake of solute 2638
Humidity 533.275 *see also* Atmosphere; Moisture
flue-gas dewpoint apparatus 1732, hygrometer time-lag and fatigue 2817, equilibrium apparatus 2818, fertilizers 2819, diffusion instrument 2820
Hydrodynamics 532.5 *see also* Flow; Jets; Waves; Weirs
Solid bodies in liquids 532.58
acceleration potential 125, particles in turbulent stream 1296, propeller efficiency 1717, ship resistance analysis 1718, spheres, fluid resistance 2793
Hydrostatics 532.1 *see* Equilibrium; Floating bodies
Hygiene 613/614 *see also* Air pollution; Insecticides
climate, weather effects 404, impregnated "zellwolle" props. 2061 vision and production 2263
Impact 531.66
coeff. of restitution 1267, ball pendulum experiments 2759
Inclusions 539.219.1
gmelinite and mordenite 522, effects of O_2 in Ag 1979
Inflammability 536.468
paper, test 215, plastics 1171
Infra-red spectra *see* Spectra
Inks 667.5
rheology 326, sizing test 2645
Insecticides 632.94
abrasives 420, stability of derris 2510
Instruments *see under specific subjects, e.g.* Astronomical instruments
Interference fringes 535.415
new Haidinger fringes 2947
Interferometry
Light 535.417
expansion measurement 185, prism face, tolerances 578, Rayleigh, gas analysis 1431, silvered mirror 1463, metal surface testing 2256, new methods, crystal surfaces 2948
Interpolation
Algebra 512.52
inverse interpolation coefficients 15, polynomial coefficients 425, Lagrangian coefficients 2085
Ion counters 539.16.08 *see also* Cloud chambers; Ionization chambers
light-sensitiveness 289, centre-wire collection 290, point counter, theory 647, γ-ray, abs. efficiency 648, construction, operation 649, frequency distribution of discharges 1523, 1538, discharge instability 1939, mechanism of action 1940, min. current 1941, α-rays, counting system 1942, spark, for liquid photoelectricity 2858, application to respiration 3069
Circuits *see* Counting circuits
Ion velocity
Electrolytic 541.133.1 *see also* Conductivity
diffusion current, Ba and Sr in H_2O 1090, diffusion current, Pb in KCl 1091, electron microscopy 2019
Ionization 537.56/.58 *see also* Dissociation
by cosmic rays 630, 1880, 1890, 1891, 2329, atmospheric, equilibrium 728, auto-, doubly excited He 1399, Ni *K*-level, by electron beam 1864, gas in electric field 3047, of air by charged dielectrics 3048
Ionization chambers 537.56 *see also* Electroscopes
for cosmic rays 1880, 2329, theory 2372
Ionization potential *see also* Dissociation energies
chloro-ethylenes 911, active N_2 1521, Li^+ calculation 1679, shape of excitation fn. 2290
Ionosphere 551.510.535
timed radio waves 486, h.f. conductivity 975, determination of electron distribution 2037, conductivity 2301
Ions
Gaseous 537.56
Li^+ mobility in He 985, active N_2 1521, charge neutralization 1870, in air, equilibrium equation 1871, Mg, source 1936, H, Balmer spect. long duration 2237, H, scattering and neutralization in CH_4, C_2H_4, C_3H_8 2326, 2327, H and O neg. ions in stellar atmosphere 2718, metastable, mass spectrometer detection 2891, light absorption by Na^- 2927, cyclotron source 3071
Liquid 541.132 *see also* Conductivity; Electrolysis
molten salts 2807
Iron and steel 669.1
coercive force and C-content 275, weld, fatigue strength 322, spectrum analysis 421, 1389, 1390, sub-zero treatment 948, 1033, hardenability control 1038, C–Fe systems 1043, Armco, work-hardening 1168, control methods 1169, microstructure 1549, damping capacity, effect of heat treatment 1554, photoelectric det. of Ti 2226, pearlite growth 2405, transformations by friction 2438, brittle cracks 3141
Isomerism 541.62
butene-1 and -2, equilibrium 1123, paraffin hydrocarbons 1124, octane isomerization 1499, 1503, ring substitute interaction 3113
Isomorphism 548.32
cinnamic acid 387, benzalaniline 388, *p*-bromoiodobenzene 389, Rb and Tl 2574
Isotopes 539.155.2
human K^{40} 287, photosynthetic O 1096, N, S, exchange factor meas. 1937, 3068
Jets 532.525
jet and rocket propulsion 866, turbulent 1292, spray nozzle design 1713, electric arc analogy 2788, Schlieren shadowgraph equipment 2881
Kinematics 531.1
disc, stress analysis 847, 1262, manufacturing problems 1684, locomotor mechanics, time and motion study 2147
Kinetic theory
Gases 533.7
2-dimens. statistics 100, mol. compressibility 148, van der Waals' constant from sp. ht. ratio 888, communal entropy 1244, forces betw. H_2 molecules and atoms 1323, forces betw. H_2O molecules 1324, H and D, equation of state 1533, Brownian movement, resistance noise 1682, energy of uniformly accelerated particles 2833
Liquids 532.7
Guthrie lecture 136, monolayers 516, communal entropy 1244, liquid A, atomic distrib. 1726, energy in liquid 1817, molten salts 2807
Laboratory apparatus 542.2 *see also* Chemical laboratory practice
recrystallization apparatus 143, gas-liquid agitators 329, 3-stage vacuum pump 2195, magnetic stirrer 2526, combined absorption and stirring 2527, glass-tubing chuck 2528, automatic siphon 2530, analytical filter papers 2531
Lamps 535.231.4 *see also* Light sources
fluorescent lamps 1353, tungsten lamps 1749, illuminants for colorimetry 1751
Laplace's equation 517.942.9
numerical solution 1202
Latent heat 536.65 *see also* Thermodynamic properties
Adsorption 536.658
sol-gel transformation 223, phase transition 366, 2-comp. solid-liq.-vap. 514, gmelinite and mordenite 522, isotherm, solids, free energy 1118, proteins, water vapour 1119, hydrogen on tungsten 1120, isotherms 1303, liquids on gels 2995
Solution 536.653
$Mn(NO_3)_2 . 6H_2O$ 224, Mg, Ca and Ba nitrates 225, $Al(NO_3)_3$ 226, calculation 595, $MeNH_2 . HCl$, $Me_2NH . HCl$, $Me_3N . HCl$ 1489, polythene 1490, SO_3–H_2O 1811, high polymer 1814, rubber 1816

Latent heat—*contd.*
Vaporization 536.655
rel. to surf. energy 130, alkali halides 214, adsorbed layers 368, aq. salt solutions 962, N_2O 1471, calc. from equation of state 1493, *trans*-2-butene 2281, water 2975
Least squares
Mathematics 519.281.2
non-linear problems 1217
Length measurement 531.71
cantilever bar 1268, change-of-capacitance method 1695, blood-film cell diameters 2761
Lenses
Geometrical optics 535.316/.317 *see also* Optics
focal lines of 2 plano-cyl. lenses 167, vignetting 168, photographic, assessment 898, luminosity 1363, replacing non-spherical surfaces 1368, $\cos^4$ law of illumination 1369, aircraft camera 1370, Schmidt–Cassegrain variant 1759, plano-meniscus, wide aperture 2230, harmonic analysis of images 2231, inverting eyepiece 2232, 5 in. camera lens 2266, Schmidt, television 2871, design formula 2872, ray tracing 2873, surface ray changes, effect on image 2875, transfer coefficients 2876, 2879, Schlieren air flow analysis equipment 2881, effective aperture 2882
Aberration 535.317.3/.7
theory 1366, classroom demonstration 2229, adjustment method 2874, axial, field curvature 2880
Photographic 771.351
assessment 898, lens illumination $\cos^4$ law 1369, aircraft 1370, plano-meniscus, wide aperture 2230, 5 in. focal-length lens 2266, effective aperture 2882
Light
Biological action 578.088.5
u.v., amoeba 2857
Electromagnetic theory 535.13
wave scattering 1349, non-homogeneous spaces 2855, statistical properties 2856
Velocity 535.22
review of measurements 1352
Light sources 535.89 *see also* Lamps; Monochromators; Spectroscopy
shadowgraph equipment 1464, stroboscope 2842
Lighting 628.9
avoidance of glare 2960
Lightning 551.594.22
glow-arc transition 1148, current, voltage, 132 kV system data 1590, susceptibility of trees 2042
Linear substitutions 512.86
substitutional equations 1184, Lorentz transformations 1242
Liquids
Theory
internal friction 1273, forces betw. H_2O molecules 1324, dielectric saturation 1923, energy levels of "holes" in liquids 2746
Low-temperature phenomena 536.48 *see also* Superconductivity; Super-fluidity
absolute zero attainment 587, behaviour of metals 666, steel treatment 948, gaseous He, transfer theory 1275, gaseous He, thermal cond. 1469, sound radiation in He II 2986
Lubrication 532.516
diff. equations of continua 62, friction, wear, corrosion 1287, friction at h.p. 1288, stability 1290, polar compounds 1711, instrument oil 2437, of metal surfaces by fatty acids 2783, water-hammer theory 2787
Luminescence 535.37
fireflies 164, appl. in mining 182, quenching 691, crystals, paramagn. ions 913, triplet state 1425, potato virus detection 2216, chromaticity 2248, solutions, influence of concentration 2936, partial selection rule 2937, phosphorescence and single-triplet absorption 2940, phosphors, mechanism 2945
Inorganic substances
list of minerals 181, diamond 571, 576, $MgWO_4$ 915, quartz, radium rays 1004, glass 2247, $ZnSiO_3$ phosphors 2893
Organic substances
polarization in dyes 188, vitamin A 572, triarylmethyl free radicals 904, triarylmethyl 905, dyestuffs in solution 914, polyene 916, diethyl pseudo-isocyanine chloride 2249, naphthacene 2250, aromatic hydro-
Luminescence—*contd.*
Organic substances—*contd.*
carbons in solution 2910, crude oil, analysis 2935, naphthacene in anthracene 2938, dipropyl acetone 2939, naphthalene crystals 2941, haematin test 2946
Magnesium 669.72 *see also* Alloys
acid corrosion 3106
Magnetic current
281, 1913, magnet pole strength change 278, search for mag. ions 280, gas evolution by mag. poles 282, particle motion in mag. fields 1912, saturation 1914, rotation of electrolytes 1915, 3064, motion of electrolytes 1916, e.s. field of perm. magnet 1917, theor. proof by expanded field equations 1918, $Fe(OH)_3$ 1919
Magnetic fields 538.12
decay in conducting medium 462, uniform, by 2 dipoles 992, energy and mechanical relations 1893, inside ferromagnet 3057, plotting by directional loci 3058
Magnetic measurements 538.082/.083 *see also* Terrestrial magnetism
r.f. dispersion apparatus 1900, single magnetic charge 1917, quick-response magnetometer 2351, Hg-jet magnetometer 3055, field plotting by directional loci 3058, abs. magnetometer 3065
Magnetic properties 538.22
steel, coercive force/C-content relation 275, Cr oxide catalyst 276, tektite 277, tourmaline and epidote 993, iron pyrites 994, ascorbic acid 1074, varved clay, anisotropy 1137, Ca and Sr ions 1526, *p*-benzoquinone, quinol, quinhydrone 1527, augite 1894, Ge 1895, molybdenite 1896, iron wires at r.f. 1897, Ga salts, n.f. dispersion 1898, quinhydrone 1899, $KMnO_4$ 1901, materials, survey 2352, paramagnetic salts, low temp. 2354, alkyl and aryl halides 3059, temperature effect, molybdenite 3060
Magnetic storms 550.385
data, April–Dec. (1944) 719, 2608, 2609, quiet and disturbed days 721, 2613, rel. to aurora 729
Magnetism 538 *see also* Diamagnetism; Gyromagnetic effect; Terrestrial magnetism
Coulomb's law 272, Kelvin lecture 273, theory, materials, survey 2352
Magnetization 538.2
polycrystalline Fe and Fe–Si alloys, improvement 274, steel coercive force/C-content relation 275, iron tube, demagnetizing factor 279, permeability/frequency function 1902, change in B/H by premagnetization 1903, elliptic spheroid instrument rotors 2353, sheared materials 2355, field inside ferromagnet, theory 3057, general ellipsoid 3061
Magneto-electric effects 538.69
on electric discharge 981, Larmor's theorem 1857, on $Fe(OH)_3$ 1919
Magneto-mechanical effects 538.65 *see also* Gyromagnetic effect
electromagnetic-hydrodynamic waves 637, on torsion modulus of some metals 1911, compression magnetization of Ni 2360
Magneto-optical effects 538.61
double refraction, Cotton–Moulton const. 636, Faraday rotations in solutions 1910
Magneto-thermal effects 538.66
molybdenite susceptibility 3060
Manganese 669.74
X-ray parameter, effect of H 3032
Manometers 531.787
control methods 1169, surface, monolayer 1302, respiration type 1699, tympanometer 2165, distillation type 2166, electric 2167, design, production 2769, glass spirals 2770
Mass spectrographs
1937, Mg ion source 1936, equipment 2235
Mass spectrometry 535.336.2
appl. to hydrocarbons 1765, cosmic ray meas. 1881, isotope exchange meas. 1937, electronic problems 2235, theory, application to analysis 2236, metastable ion detection 2891, gas analysis 2892
Mathematics 51
generalization 1173, teaching 1174
Matrices 512.831
associated 16, pseudo-Euclidean rotation 17, factor analysis 18, correlation 19, 20, iteration 426,

Matrices—*contd.*
inversion 427, convergence of iterative process 428, appl. in elect. engng. 429, solution of simult. equations 776, Hermitian, reduction 1183, analysis of structures 1253, coupled system frequency calculation 2663
Measure theory 519.53
Wiener measure 1650, covering principle 2668
Measurement 53.082
electronic methods 836
Mechanical strength 539.4 *see also* Breaking strength; Brittleness; Creep strength; Hardness; Work hardening
effect of length 1553
Heat treatment 539.4.016.3
GR–S 661, 662, ageing of GR–S 663, steel forgings 1034, Armco 1168, steel, damping capacity 1554, superheating, Mg alloys 2418, propagation of cracks in steel 3141, plastics 3144
Materials
paper, effect of esterification 300, alloys 317, lab.- and mill-made paper 320, Hycar OR–Geon 102 mixture 665, metals at low temp. 666, paper, wet strength 748, cellulose fibres, wet strength 749, laminated glass 1010, paper, effect of writing inks 1032, welded constructions 1035, 1555, paperboard 1552, paper, melamine-resin treated 1556, cellulose pulps 2010, cotton fibres 2385, laminated temperature effect 2416, cellulose plastics 2417, cellulose acetate 2524, clayware 3088, moulded fibre-resin 3145
Medical Science 61 *see also* Hygiene; Pathology; Physiology; Therapeutics
electron microscope appl. 3040
Melting 536.421.1 *see also* Freezing
trinitrotoluene diagram 213, polythene 1472
Melting point 536.421.1
apparatus 212, NH_4 acetate 330, hexamethylethane 945, N_2O triple point 1471, α-alumina 1799, benzoic acid 1807, paraffin wax 2274, Si chlorobromides 2782, ice 2975, methylbenzenes 2978
Mesons *see also* Cosmic rays; Fundamental particles; Nucleus; Scattering
evidence for low mass mesons 1848, 1966
Metallurgy 669 *see also* Alloys; Aluminium; Copper; etc. effect of low temp. 666, emission spectrometry 1762
Meteorological instruments 551.508
Ag-disc pyrheliometer 2035, recording of precipitation traces 2036
Meteors 523.5
whistling 801, British data 1658
Microscopes 535.82
increasing depth of focus 199, polarized light resolving power 2267, chin-operated focus adjustment 2268
Microscopy 535.82
photomicrography focusing 198, light, electrons and X-rays 897, phase difference microscopy 1374, 1784, 1785, 1786, visual factors 1445, glare-free illumination 1460, of pigments 2261, darkfield illuminator 2968
Preparations
stains 200, 203, 204, 205, 1461, 1788, mounting medium 201, tissue softening 202, synthetic resin sections 1787
Microstructure 539.24
wood pulp 303, Ni-Zn alloys 1022, plywood 1170, high-silicon Fe 1549
Milky Way 523.85
colour excess and distance 1669, colour indices 1670
Mineralogy 549
electrode coating identification 1134, identification indexes 3132
Mirrors *see also* Optical instruments
Geometrical optics 535.312/.313
Darwin–Prins formula 610, coma-free twin ellipsoid 1462, Schmidt, television 2871
Models 608.4
human circulation 1151, suspension bridges 1154, rubber-like deformation 2060
Moisture 543.712, 543.812 *see also* Atmosphere; Humidity; Soil moisture
content, det. 377, cellulosic materials, effect on elec. properties 602, textiles, survey 2025, wood 2642
Molecular structure
Chemistry
dextran and levan 283, coronene 708, phosphoryl-bromides 998, biphenyl, *o*-terphenyl, tetraphenylene 999, cellulose, chain length 1280, solid Si 1430
Physics 539.13 *see also* Bonds; Crystals; Dipole moments; Dissociation energies; Spectra
H_2O dissociation 344, bond moments 372, 2514, vibration-rotation of polyatomic molecules 640, electron mobility 641, diatomic, precession states 902, linear polyatomic 997, force const., diatomic linkage 1000, linear asymm. triatomic 1404, benzene 1406, ozone 1407, tetrahedral X_2YZ_2 model 1532, H and D, equation of state 1533, fourth power vibrations 1534, energy, virial theorem appl. 1920, bent XYZ molecules 1921, diatomic, quadrupole moment 1922, interatomic distance 1924, bonded molecules 1925, diatomic molecules in magnetic field 1934, CO, N_2, NO and CN 2240, vibration of X_2Y_6 molecule 2363, polyatomic molecules 2748
Molecular weight 541.24
cellulose 119, coumarone-indene resins 863, polymers, distribution 1122, macromolecular systems 1557, cellulose acetate 1705, cellulose heterogeneity coefficient 1706, β-lactoglobulin 2506
Molecular weight determination 541.24
modified cryoscopic equation 521, light scattering method 1432, 2507
Moments
Mechanical 531.23 *see also* Bending
3-dimens. pipe structures 1249, finite-difference equation 1250, indeterminate structures 1687
Monochromators 535.339 *see also* X-ray monochromators
quartz polarizing, temp. effect 798
Moon 523.3
atmosphere, mass 800
Muscle 591.175
adaptations in muscle 736, effect of temp. 737, excitability 738, length/tension diagram 2057
Music 78 *see also* Acoustics
post-war problems 537, contribution of science to appreciation 894, intonation of clarinet 1337
Navigation 527
radio d.f. and gyro-compass 501, history of geomagnetism 638
Nebulae 523.85
NGC 147, NGC 185 resolution 820, Messier 32, NGC 205 resolution 821, anagalactic nebulae 2133, 2134, star counts 2716
Nervous system 591.18 *see also* Electrobiology
p.d. as pathogenic agent 242, effect of d.c. 252, electronarcotics 253, excitability 738, accommodation, theory 2058, mechanisms for concepts of difference and similarity 2635, reflexes 2636, nerve polarity 2637
Neutrons 539.185 *see also* Scattering
generator 297, capture cross-section of H 1968, reaction cross-section formula 2382, radioactivity measurement 3072
Biological action
broad bean root 262, bacteria 298, rat retina 652
Nuclear capture
resonance levels 1541, 1542, 1543, Mg, Ga, Pd resonance absorption 1967
Night sky spectrum *see also* Sky brightness
2905, molecular N_2, infra-red 833, 3137, region F ionization 2725
Noise abatement 534.83
air-conditioning systems 2211, helical gears 2853
Nomography 518.3
$yx^n = z$ 1215, radio data 1634, quadripole theory 2098, gas. vol. conversion 2194, sound absorption 2208, equilibrium constant data 2447
Non-rigid solids
Statics 531.224.8
earth pressure 2062, bridge foundation problem 2148
Novae 523.841.1 *see also* Astronomical spectra
Aquilae (1943) 466, N. Puppis, photometric data 468, (T) Pyxidis outburst 2121, Meudon Observatory 2701
Nuclear disintegration (artificial) *see also* Neutrons; Nuclear excitation; Radioactivity
Al^{28}, Mg^{27} by neutrons 288, N, Ne, by neutrons 1965

Nuclear excitation *see also* Neutrons
Na^{24}, Br^{82}, Kr, by deuterons 1007, Ag, Cd, X-rays and electrons 1855, γ-ray resonance absorption 1954, radiation widths of highly excited nuclei 1955, photo-effect, threshold measurement 1962, 1964, Au, by γ-rays 1963, In^{115}, "Bremstrahlung" invest 2376, Rh, by γ-rays 2379
Nuclear photo-effect *see* Nuclear excitation
Nucleus *see also* Fundamental particles; Quantum theory; Scattering
deutron binding energy 642, classification 3066
Meson field theory
meson scattering 93, vector-pseudovector theory 285, rel. to gravitation 643, 2368, difficulties 644, mesotron mass calc. 645, neutron-proton scattering 1001, 1931, photon and meson 1235, meson charge cloud 1927, pseudovector-scalar theory 1928, potential energy of nuclear recoil 1932, mixed fields 1933, elementary particles, excited spin states 2145, representation of forces 2369, wave equations for p and n 2749
Numbers
Algebraic 511.6
character sums 4, irreducibility 12
Prime 511.28
double exponential sums 5, Eratosthenes' sieve 6
Special 511.9
Mersenne number 775, prod. of demlo-numbers 1181, powers of $(9)_n$ 2083
Theory 511
divisor problem 2, Tarry's problem 3, character sums 4, Ramanujan's sum 7, formulae for $d(n)$ 8, 1177, lattice points 24, sequence of integers 424, m consecutive integers 1175, Bertrand's postulate 1176, 2658, finite field theory 1605, representation by sum of squares 1606, integral order 2081
Observatories 522.1 *see also* Astronomical instruments
Abastumani, 1940–42 report 1651, Mt. Wilson report 1652
Occultations 523.99 *see also* Eclipses
Hyderabad observations 1673
Oceanography 551.46 *see also* Sea temperature; Tides
Dead Sea whiteness 403, sea water transp. 2245, internal ocean waves 2794, daylight penetration 2934
Oils 665.5
appl. of spectral methods 171, hydrocarbon content 2545, tall oil, application 2644, C isotopes 3068, catalysis 3100, catalytic cracking 3101, 3103, isoparaffins with $AlCl_3$ 3102
Optical films 535.39
W and Sb 184, apparent reflectance meas. 1429, solid Si 1430, films on optical element, appl. 1774
Optical instruments 535.8 *see also* Glass; Lenses. *Individual instruments are listed separately, e.g.* Refractometers
resin as optical cement 761, mirrors for interferometry 1463, PbS mirrors 2269, plastic windows, distortion tester 2411
Optical rotation 535.56
β-glucosides 189, triterpenoid compounds 1436, Faraday rotations in solutions 1910
Optics
Geometrical 535.31 *see also* Lenses; Mirrors
Herzberger's method 166, wedge lighting 1365, virtual image locator 1367, 2870, projection 1758, pictures and images 2228
Orbits
Astronomy 521.2/.6
ninth Jupiter satellite 796
Organ pipes 534.115
with movable pistons 891, sound velocity measurement 155
Osmosis 532.71
rubber in mixed liquids 137, 138, aq. and alcohol phases 139, $ZnBr_2$ 597, isotonic solutions, $NaBrO_3$ and $KClO_3$ 879, metal halides 880, high polymer solutions 1814, sols, coagulation 2501
Osmotic pressure 532.71
osmometer 877, 878, cellulose acetate, mol. wt. 1705
Oxidation 542.943 *see also* Autoxidation
stability of derris 2510
Electrochemical 541.138.2 *see also* Electrolysis
thiosulphate 684, nitroguanidine 685, corrosion 2020
Paints 667.6
infra-red baking 1482, sprayability 2435, temp. indicating 2987
Paper 676
surface-active agents 134, colour measurement 191, flammability tests 215, effect of esterification 300, cellulose disintegration 303, bursting strength 320, action of u.v. light 362, $MgH_2(SO_3)_2$ process 745, wet strength 748, GR–S as saturant 751, movement of solutions 874, heat dissipation 937, fibres, wt. factor 1014, strength, effect of ink 1032, Na_2O_2 bleaching 1160, 1161, 1598, 2647, stock preparation 1552, melamine resin treatment 1556, recovery of waste 1596, kraft cooking, sulphidity 1597, sulphite cooking 1599, 2075, air-handling, economical 1600, viscosity 1707, chemical defoamers 1725, handsheets, water resistance 1977, air resistance 1978, stress/strain curves 2004, barking with water 2074, erasing quality 2432, sulphite pulping process 2451, water vapour permeability 2646, clay coating 2648, light-fastness testing 2649, evaluation of straw and other residues 3142
Varieties 676.3/.8
newsprint, desirable characteristics 746, special art types 747, weatherproof fibre board 2650, laminates 3143
Parachor 541.265
capillary apparatus 369, group values 370, tertiary alcohols, saturated hydrocarbons 371, resonance inhibition 374, correlations with crit. consts. 1479, effect of temperature 2508, tertiary chlorides 2509
Parallax
Stellar 523.813
photogr. determination 806
Particle size 539.215.4
clay 299, centrifugal sedimentation 1101, γ-Al_2O_3 2590
Particles *see* Fundamental particles
Pathology 616
recording of tremors 153, malaria parasite removal, mathematical theory 733, *p*H measurement in mouth 743, electron microscopy 1857a, electron microscopy of viruses 2049, law of mass action 2462, cancer, math. approach 2641
Pendulum 531.53
energy experiment 104
Permeability
Mechanical 539.217.3/.5 *see also* Porosity
effect of esterification 300, keratin 301, 1546, 3077, sheet materials 302, packaging materials, measurement 653, 1020, triple-ply glassine laminate 1017, filter paper 1018, rubberized rayon 1019, organic films 1547, fibre wads 1697, keratin and wool 1727, paper handsheets, effect of Al_2O_3 1977, paper 1978, water repellency of fabrics 2187, mosquito nets 2389, convection current 2973, cellulose wrappings 3139
Permittivity 537.226 *see* Dielectrics
Petrology 552
appl. of fluorescence 182, tektite, magn. susceptibility 277, air permeability of sands 654, varved clay magn. properties 1137, coal, infra-red spectra 2924
***p*H** 541.132.3 *see also* Electrolysis
Borax buffer 355, rare earths 1087, Na triphosphate and $MgCl_2$ interaction 1569, galvanic soil corrosion 2018, K dihydrogen phosphate and disodium hydrogen phosphate 2474, buffer standards 2475, corrosive soils 2476, purification of water, control 2477, effect on thymine spectra 2921, organic acid stds. 3104
Phase equilibrium 541.121/123 *see also* Solutions
ethane 1041, hydrocarbons 1561, 2441
Binary systems 541.123.2
azeotropic solutions 229, hydrocarbons, const.-boiling 1042, CCl_4–C_2Cl_4 1478, phenols in C_6H_6 2443, hydrocarbon mixtures, nomograph 2447
Ternary systems 541.123.3
Mg selenate–sel. acid–H_2O 332, prediction of ternary from binary data 1044, iodine–D_2O–CCl_4 1047, H_2S–monoethanolamine–H_2O 1563, Na stearate, kettle wax 1571, acetic acid–benzene–CCl_4 1802, dist. of solute in any 2 phases 2442, methane–ethylene–isobutane 2444
Phosphorescence 535.37 *see* Luminescence

Photochemistry 541.14 *see also* Photolysis
aq. sol. 296, H with acetylene 339, ethylenes and phenanthraquinone 359, fluorescent substances 691, spectral index 692, O, isotopic comp. 1096, inactivation of trypsin and papain solutions 1099, theory of vision 1446, increase in viscosity, rubber 1701, dyeing properties of wool 2021, photochem.-analysis 2485, quantum theory of photography 2486, ultra-violet, effect on cellulose esters 2487, O^{18} in atmos. O_2 2488, bromination of hydrocarbons 2489, pine trees 2490, butadiene polymerization 2491, intensity-scale instrument 3107
Photo-conductivity 537.312.5
NaCl, ultra-violet 976, evaporated Bi films 977
Photo-elasticity 535.55
glass testing 187, optical glasses 581, 3-dimensional 922, torsional stresses 1248, glass strain viewer 2950, isoclinic photography 2951
Photo-electricity 535.215 *see also* Electro-optical effects; Photo-conductivity
X-rays 613, excitation of Th 620, wavelength dependence 976, evaporated Bi films 977, discharge in Cl 982, 2217, effect on electric discharge 983, 1847, 2306, liquids 2858, metal emission theory 2859
Photogrammetry 526.918
geometric optics 1370
Photography 77 *see also* Cameras; Lenses; Radiography; Sensitometry
Amer. standards 762, specular densities 918, quantum theory of exposure 2486
Colour 778.6
direct processes 772, monopack processes 773, Agfa process 3148
Processes 772/777
graphic arts, developments 747, tone-reproduction graphs 764, hypo determination 765, fog formation in developers 766, halftone screen 767, theory, halftone process 768, 769
Scientific 778.3
plate calibration 163, micro-analysis 165, photomicrography 199, brightness constancy 770, u.v. sensitization 771, electron-path model 974, plates for ultra-violet spectrography 2655, 10^{-6} sec X-ray snapshots 2656, electronic exposure time control 2657, X-ray images 3033, intensifying screens 3146, stereoscopy, development 3147
Photolysis 541.144.8
acetone 360, polarized light 361, cellulose 362, vitamin B_2 in milk 363, *d*-glycosides 1097, acetone, effect of CO_2 and N_2 1098, chain photolysis of acetaldehyde 2492
Photometry 535.24 *see also* Densitometry; Spectrophotometry
demonstr. experiments 553, germicidal activity of lamps 1354, $\cos^4$ law 1369, illuminants for colorimetry 1751, luminescent materials 1753, use in reflector gunsight design 1754
Brightness 535.241.44
low brightness photometry 161, helios 554, units 555, analysis of opinions 2218, total radiator temp. 2862
Photo-electric 535.247.4
firefly flashes 164, applications 558, blood oxygenation 895, light-fastness tests 896, afocal systems 1364, 2869, for ultra-violet 1752, transmission type 1755, ratio of 2 illuminations 1756, photo-electric luminometer 1757, flash bulbs, oscillograph method 2227, compensating microphotometer 2868
Physical properties 53.081.7
acetylenic compounds 2140, butanes and butenes 2728, acrylonitrile 2729
Physics 53
new algebras 13, appl. in archaeology 85, appl. in Navy 834, research in 1944 2139, laboratory design 2730, appl. to power plant 2731, relation to art 2733
Physiology 612 *see also* Blood; Electrobiology; Hearing; Muscle; Nervous system; Vision
bio-electric potential 231, body elect. resistance 245, 249, skin resistance and pain threshold 605, removal of parasites 733, body water, chloride distribution 739, oxygenation, photo-electric measurement 895, model of circulation 1151, locomotor mechanics, time and motion study 2147, uptake of solute by
Physiology—*contd.*
tissues 2638, locomotion of quadrupeds 2639, blood analysis 2958, casein fractionation 3019, respiration, use of G.M. counter 3069, bone, X-ray diffraction 3081, electrophoretic analysis 3117
Piezo-electric oscillations
even harmonics 603, transverse 604, 2 simultaneous oscillations 1328, supersonic generator 1741, harmonics 3011
Piezo-electricity 537.228.1
calc. from ionic lattices 1832, crystal, group-theory 1833, quartz axis det. from etching pattern 3123
Planck's constant 530.145.5
X-ray determination 89, universal constant 490
Planets 523.4 *see also* Astronomical spectra
J IX orbit 796, Titan 2114, observations on the Pic du Midi 2699
Plasticity 239.214 *see also* Rheology
boundary value problems 63, 1203, principal stress lines 309, effect of shape 667, soil pressure 1008, 1009, variational principle 1971, soil mechanics 1972, metal cutting 2419, pseudo-plastic theory 3074
Plastics 679.5
effect of environment on strength 657, organic glasses 668, plasticizers 752, phenolic laminates 753, 756, lignin, appl. 754, lignin ethers, appl. 755, melamine laminates 757, amino resins 758, chemistry 759, appl. to textiles 760, manufacture, water treatment 1085, resinous ion exchange 1086, flammability 1171, Compreg, strength, characteristics 1595, sections for microscopy 1787, thermal behaviour 1798, plastic films 2387, optical distortion tester 2411, effect of ambient conditions 2417, creep properties 2423, formation from Schiff's bases 2651, acrylic resins, vulcanization 2652, 2653, temperature stability 3144, mechanical strength 3145
Polarization
Electrolytic 541.135.6 *see also* Electrolysis
colloidal inhibitors 357, redox potentials 683, V salts, potentials 1094, anodic behaviour of Pt 2483, oxidation potential 2484, Mg corrosion 3106
Polarized light 535.5 *see also* Double refraction; Optical rotation; Photoelasticity
dye fluorescence, molecule orientation 188, dyestuffs in solution 914, angle for reflection 919, protein film, thickness measurement 1433
Polarographic analysis 545.37 *see* Chemical analysis
Polymerism 541.64
cellulose 119, styrene, mechanism 340, reaction rates 1053, styrene, reaction rate 1054, cyclohexene 1125, entropies of mixtures 1501, styrene decomposition rate 1565, copolymer structure 1577, butadiene 2491, A.P.S. high-polymer division meeting 2523, cellulose acetate properties 2524, vinyl polymerization 2533
Polymorphism 548.33
$AlF_3 . 3H_2O$ dimorphism 1582
Polynomials 512.3
reciprocity 1608
Porosity 539.217.1 *see also* Permeability
sands 654, sillimanite block 1016, textile materials 2388, Mg–Al–Zn alloy 3076
Positive rays 537.534 *see also* Ions
spirotron 614, modern research 2325
Potential
Electrostatic 537.213 *see also* Contact potential
Laplace's equation for 2 spheres 65, co-axial conductors 2146
Prehistory 571
appl. of physics 85
Pressure *see* Atmospheric pressure; High-pressure effects; Manometers
Prisms
Optical 535.315
resolving power 559, tolerances by Newton-rings 578
Probability 519.2
limiting distribution 72, random distr. of particles 73, random walk 74, frequency distribution 75, convergence of iterative process 428, recrystallization 1131, diffusion problem 1216, negative probability 1639, strength of bundles of threads 2100, electrical measurements 2686, approx. to normal distribution 2687, systematic extraction 2808, unpolarized light 2856

Projectiles 531.55/.57
sighting A.A. guns 105, small-arms 852, escape conditions 1266, optimum height of rocket or jet bomb 2830
Projection
Geometric 515
scale curves 431, 432, statistical appl. 2667
Projectors
Optics 535.88
stereoscopic 1789
Prominences
Solar 523.752
Oct. 3, 1942 obs. 463, spicules of short lifetime 2700, Meudon Observatory 2701
Prospecting 550.8 *see also* Geophysical prospecting
hydrocarbon survey 418, mud analysis logging 2614
Psychology 159.9
factor analysis 18, colour 190
Quadric surfaces 513.56/.58
harmonic locus 25, Darboux pencil 26, axes of plane section 2086, associated scrolls 2088, covariant line complexes 2665
Quality control 519.24 *see also* Sampling
450, 1646, 2109, 2691, 2692, control chart 449, accuracy control 451, lot-sampling 452, manufacturing to specification 791, insulator manufacture 2101, min. sample size 2104
Quantum theory 530.145 *see also* Field theory; Fundamental particles; Nucleus; Spectra
system of particles 494, equilibrium at $T \gtrsim 10^9$ deg 496, wave function, commutativity 1237, calculus of finite precision 1238, quaternion combinations 1241, Hamiltonian theory 1243, spin in the universe 1680, generalized qu. electrodynamics 1906, reality problem 2741, hypermaximal and Hermitian operators 2742, particles of spin $\frac{3}{2}$ 2747, 2nd law of thermodynamics 3005
Applications
hydrogen intensity integral 91, continuous spectra 491, variational problem 492, Zeeman effect 493, operator applications 1193, expansion of wave function 1236, electric circuit model 1239, network-analyser study 1240, Stark effect, theory 1508, multipole radiation 1529, hyperspherical harmonics 1618, eigen-value calculation technique 1679, energy levels of electrons in metals 2370, approx. solution to scattering integral equation 2683, harmonic oscillator 2740, lattice interaction 2743, absorption of light by Na^- ions 2927
Radiation 535.14
radiation and 2 electrons 159, symmetric wave function 495, Cerenkov radiation 619, production by electron collision 1350, vision threshold 1351, ageing of light 1748, photon structure 2215
Quartz 553.621
etching 160, 386, 3123, even harmonics 603, transverse oscillations 604, luminescence by radium rays 1004, mounting 1149, New Zealand specimen 2044, Raman spectrum 2251, elastic constants 2404, rodometric examination 2561, terminology of twinning 2573, control of silica dust in cutting and grinding 2597, haloes 3121
Quaternions 512.94
symposium R.I.A. 1186, matrix presentation 1187, appl. to meson matrices 1241
Radiation 535.23 *see also* Bolometers; Quantum theory
colour-temp. scale 1355, Wien's law, relativistic proof 1750, brightness-temp. relation 2862
Heat 536.33
relativistic theory 208
Solar 551.521
Washington record 408, pyrheliometer stability 2035, long-wave 2861
Radioactivity 539.16 *see also* Alpha rays; Beta rays; Cloud chambers; Gamma rays; Ion counters; Nuclear disintegration; Nuclear excitation; Radiochemistry
β-emission, theory 294, 295, α-emission, theory 651, action on penicillium notatum 1005, Ra estimation, γ-absorption correction 1943, N.Z. rocks 2034, neutron 3072
Artificial
Al^{28}, Mg^{27} 288, spectrograph for X-ray spectra 1849, Sc 1944, xenons from I 1945, Zr, Nb(Cb) 1949
Radioactivity—*contd.*
Artificial—*contd.*
Electron capture
A^{37} 1006, non-*K*-electron capture 1935, Zn^{65}, Auger electrons 3035
Internal conversion
K to *L* conversion 1929, *K* conversion 1930
Radiochemistry 539.163.4
surface and diffusion det. 292, 293, aqueous solutions 296, Fe^{59} 1959, adsorption method 1960, isolation of Zr^{89} 2511
Radiography 616–073.75 *see also* Photography
by photography of X-ray photo-electrons 613, stereoradiography 2397, image diagnostic quality 3033
Radiotherapy 615.84 *see also* Biological effects
slide rule for γ-rays 1637, γ-ray effect on cells 3070
Rainfall 551.577
smoke and rain 409, Zürich records 727, warm-front, diurnal variation 1587, Loch Quoich data 1588
Raman effect 535.375.5
Use in petroleum industry 171, depolarization 183, electrolytic dissociation 679, depolarization factor 2252, polarization 2253, 2254, vibration spectrum, crystals 2562, fast spectrograph 2890
Inorganic substances
temp. effect, H_2O, D_2O 573, diamond 576, 1427, aq. solutions of SO_2 and NH_3 1428, quartz 2251, D_3NOD ions 2942, rock salt 2944
Organic substances
shifts in organic comp. 574, temp. effect. 575, hexamethylene–tetramine 577, trimethylamine 589, triarylmethyl 905, disubstituted diacetylenes 917, dimethyldiacetylene 1426, hexene isomers 2943
Reaction kinetics 541.124/.127 *see also* Activation; Catalysis; Dissociation; Exchanges; Reaction rates; Spontaneous reactions
ketone formation 335, alkyl halide rearrangement 336, anionotropic rearrangement 337, alkaline fading 338, H with acetylene 339, styrene polymerization 340, 1054, 1565, cyclopentane decomposition 341, sulphonation 342, $KMnO_4$ thermal decomposition 343, dibromides of mono-subst. ethyl with KI 349, Cr carbides 590, h.f. discharge, H-A mixtures 608, solid-solid reactions 672, *d*-carvone compounds 673, co-polymerization 1053, 1577, diazo coupling 2014, spectrophotometry 2223, wood saccharification 2448, methylglyoxal, hypoiodite 2449, enzyme reactions 2450, sulphite pulping process 2451, base-catalysed reaction with methanol 2452, coal oxidation 2454, appl. in epidemiology 2462, photosynthesis of O_2 2488, bromination of hydrocarbons 2489, butadiene polymerization 2491, chain photolysis of acetaldehyde 2492, $HgCl_2$ vapour decomp. 3001, tetramethyl-tin decomp. 3089, effect of NO on $(Me)_2CO$, MeCHO decomposition 3091, halide vapour with Na 3092
Reaction rates 541.127 *see also* Reaction kinetics
$AgClO_4$ and MeI 345, Cl_2 and NO 346, Freon–12 evaporation 347, azodicarbonate decomposition 348, dibromides of mono-subst. ethyl. with KI 349, effect of ionic strength 354, cellulose photolysis 362, continuous reaction 674, dialkylanilines and MeI 675, exchange reactions 1048, hydrolysis of glucosides 1055, esterification, aliphatic acids 1057, esterification, substituted benzoic acids 1058, sulphonation, aromatic compounds 1059, gasification of C in steam 1060, ion exchange 1061, 3096, Ce^{IV} and As^{III} ions 1062, hydrolysis, effects of salts 1063, graphical evaluation of constants 1064, diacetone–alcohol–hydroxide-ion 1065, KI with organic chlorides 1066, hydration, β, β-dimethylacrolein 1067, sucrose crystallization 1310, VCl_4 1465, liquid hydrocarbon production 1484, octane isomerization 1503, *n*-heptane 1566, continuous-flow systems 1567, peroxydisulphate reduction 1568, mercuric-fulminate decomposition 2456, acid media 2457, catalysed alkylation of PhMe 2458, alcohol dehydrogenation 2459, pyrolysis of iodides 2460, alkaline permanganate oxidation 2461, catalytic hydrogenation 2466
Reduction
Electrochemical 541.138.3 *see also* Electrolysis
acridines 358, cinnamic acid 686, amides 687, Rh compounds 688, trinotro aromatic comp. 689, *p*-nitrobenzoic acid 690, acetone 1095

Refractive index 535.32
binary hydrocarbon mixtures 170, tertiary alcohols, saturated hydrocarbons 371, Al salts, multi-core 560, isocyanates 899, alcohol-benzene-water 1046, glasses 1371, 2884, 2885, hydrocarbons 1761, rel. with viscosity 2169, tertiary chlorides 2509, paraffins 2977
Measurement 535.321
polarized-light microscopy 1372, interferometer method 1373, 1431
Refractometers 535.322
differential 169, Jamin type 2883
Relativity 530.12
General 530.12: 531.51
space concept 22, model of universe 81, space and time boundaries 87, light deflection 88, field equations, solution 838, field equations in cosmology 1676, spin in the universe 1680, generation of field 1691, accelerated co-ordinate system 2737
Unified field theories
affine connection 86, indeterminate space-time theory 2141, classical 3056
Special 530.12: 531.18
mass-energy relation 1234, wave guides 2143
Birkhoff's theory
488, 839, comparison with degenerate Einstein theory 487, two-body problems 1229, extension to flat space-time 1677
Kinematical
2734, 2735, hypothesis of local spherical symmetry 837, criticism 1233, photon origin of solar system 1655, red-shift formula 2111, vectors and invariants 2736, 2-body problem 2738, 2739, cosmic rays 3051
Temperature radiation
temperature radiation 208
Relaxation
Elastic 539.389.3 *see also* Fatigue
high temp. creep 312, Hevea and GR-S 660, GR-S 661, 662, 663, curing rate of GR-S 664, vulcanized rubber 2415
Reports 061.055.5
Ind. Ass. Cultiv. Sci. 423, Nat. Res. Council of Physicists 774, Nat. Res. Council, Canada 1172, Carnegie Instn. 1602, 2599, 2604, Mt. Wilson 1652, systematic corrections 1672, ASXRED 2311, Carnegie Instn., dept. terr. mag. 2600, spectroscopy conference 2888
Resistance
Electrical 537.311/.312 *see also* Conductivity; Semiconductors; Supraconductivity
mean free path in metals 244, Cu–Zn and Cu–Sn alloys at low temps. 978, carbon–carbon contact 1838, liquid and solid Se 1839, gelatin foils, dehydration 1841, Ni_3Mn and NiMnFe, rel. to spont. magnetization 1843
Rheology 539.501 *see also* Plasticity
rubber, molecular theory 324, Nutting–Scott-Blair equation 325, printing ink 326, organic glasses 668, stress/strain/time formula 1025, asphalt 1036, const. stress rheometers 1037, macromolecular substances 1557, mineral-powder suspensions 1558, dried Na silicate 2173, stretching of rubber 2406, vulcanized rubber 2415, clay plasticity 2424, rubber, stress/temp./time behaviour 2425, power-law relation 2426, 2427, classification 2428, coal 2429, GR-S processing 2430
Rotating bodies 531.15 *see also* Angular velocity; Centrifugal force; Centrifuges; Gyroscopes; Spin
Euler formulae 98, 1689, 2751, spinor representation 2750
Rubber 678
polymers in mixed solvents 137, interaction with liquids 138, GR-S thermodynamic props 221, pigment stiffening effect 659, effect of milling 660, heat ageing 661, 662, ageing in O_2, N_2, air 663, elastomer crystallization 669, pigment incorporation 750, Young's modulus 1027, 3085, swelling 1031, 2412, infra-red study of vulcanization 1396, speed of retraction 1690, 2003, thermodynamics at small extensions 1815, heat of solution, entropy 1816, low-temp. properties 1991, 1992, effect of reinforcement 1993, stress temperature relation 1995, filler reinforcement 2008, 2009, fatigue failure 2422
Rubber—*contd.*
Synthetic 678.7
Hycar OR-Geon 102 mixture 665, Buna structure and properties 701, GR-I, vulcanization 1075, vinyl butyrals 1601, lactoprene 2079, swelling ratios 2413, polyisoprene structure 2595
GR-S
curing rate 664, as paper saturant 751, stress/strain/temperature relations 1994, viscosity and processing 2430
Sampling
Statistics 519.271.3
labour-saving method 1644, inverse variates 1645, distribution of mean of samples 2102, inverse binomial 2688, economy 2689
Scales
Instrument 53.085
calibration-error compensating 2732
Scattering
mesons, matrix calc. 93, H ions in CH_4, C_2H_4, C_3H_8 2326, 2327, integral equations, approx. sol. 2683
Electrons 537.533.74
penetration through foils 266, fast, by electrons 1862, fast, in cloud chamber 1863, by freely rotating groups in gases 2321, X-wave distortion effect 2322, by Pb nuclei 3043
Light 535.43 *see also* Diffusion; Raman effect
binary mixtures 186, Dead Sea whiteness 403, water drops 580, molecular aggregation, optical glasses 581, in photographic density meas. 918, pigments, opacity 929, multiple, statistical wave theory 1349, mol. wt. determination 1432, 2507, in fluids, molecular theory 1775, electric field effect on depolarization 2299, in crystals 2562
Neutron-proton
theory 646, 1001, 1931, high energy 1869, measurements 2380
Neutrons
anomalous, by heavy nuclei 2381
Protons 537.534.74
low velocity proton-proton 3045
X-rays *see* X-ray scattering
Sea temperature 551.526
N.E. Atlantic charts 726
Sedimentation 541.18.04
tobacco mosaic virus 696, Ca stearate, sediment. vol. 872, particle size det. by centrifuge 1101, sedimentation rate 1108, 1109, low-grade fuel recovery 1723, mineral, analysis 2494
Seismographs 534.647
equation of motion 542
Seismology 550.34
Bibliography 398, 714, wavelet theory 399, seismometers and seismograms 542, *P* arrival times 2031, earthquake-resisting structures 2601, computation of cross sections 3135
Semiconductors 537.311.33
effect of el. fields 246, ionic lattice 247, temp. dependence, Se 248, solid Si 1430, stannous sulphide 1835, carborundum 1836, voltage fluctuations 1837
Sensitometry 771.534.5
astronomical 456, spectral sensitivity index 692, symposium 693, wedge sensitometer 3107
Series
Infinite 517.51/.52
Sturm–Liouville expansion 49, oscillating series 50, Lambert series 51, holomorphic function, expansion 781, Euler transformations 783, sequences with vanishing differences 784, hypergeometric series, Kummer's formula 787, expansion in continued fractions 1607, multiplication by Cauchy's rule 1616, summation methods 1617, 2676
Sets of points 519.5
closure of subset 1221, tangents to continua 1649, heterogeneous continua 2695
Shock waves 534.222.2.
shock-front theory 1336
Silver 669.22
effects of included O_2 1979
Sky brightness 525.75
infra-red, molecular N_2 833, tables of direction cosines 1633, region F ionization 2725

Slide rules 518.5
transmission-line calculation 71, abridger 448, punched cards 1205, improved scale arrangement 1636, γ-therapy 1637, low performance 1638, Pythagorean scale 2099, X-ray-reflection calculator 2587, differential-analyser appl. 2684, transformer insulation 2685
Snow 551.578.4
melting and evaporation 1145
Soil formations 551.311
ground ice 724, loess profile sequence 2628, appl. in engineering 2631, effect on viaduct structure 3136
Soil moisture 551.579
land drainage, electrical analogy 410, *p*H determination 411, measurement by capacitor 412, sorption-block meter, hysteresis 1146, stabilization tests 1589, loess soils 2630
Soils 631.4
clay particle size 299, *p*H in dry soils 411, mech. analysis 694, physics, review 1969, Texas 2598, wind-blown dust analysis 2629, classification 2633, analysis with hydrometer 2643
Loess
Nebraska Acad. Sci. symposium 2624, Nebraska deposits 2625, types, origin 2626, 2627, mech. analysis 2629, infiltration 2630, road materials 2632, classification 2633, economic importance 2634
Solar system 523.2
planetary origin 1475, photon theory of origin 1655, origin 1657
Solid solutions 532.782 *see also* Alloys; Phase equilibrium $AgBrO_3$–$NaBrO_3$ 331, $Ba(BrO_3)_2$–$Ba(ClO_3)_2$ 333, gmelinite and mordenite 522, phenols in C_6H_6 2443
Solids
Structure 539.2 *see also* X-ray crystallography
soil 1969, stretched polymers 1984, pearlite growth 2405, electron diffraction study 3073
Theory *see also* Crystals
elastic continua 375, energy levels of electrons in metals 2370, lattice interaction 2743
Sols 541.182.6 *see also* Colloids
sol–gel transformation 223, suspensions, viscosity and rigidity 862, Ca stearate, dispersion state 1105, Ca-soap–oil, recrystallization 1106, indanthrene dyestuffs 1107, ion exchange (S) 1110, ion exchange, hydrous oxides 1111, wool cells, chem. dispersion 1112, Na stearate, kettle wax 1571, H-clays analysis 1572, alkali palmitates 1813, electrochemical properties, silicic acid sols 2016, viscosity 2174, micelle structure 2392, dialysed sols 2501
Solubility 532.73, 541.8 *see also* Phase equilibrium
recrystallization apparatus 143, $AgBrO_3$–$NaBrO_3$–H_2O 331, $Ba(BrO_3)_2$–$Ba(ClO_3)_2$–H_2O 333, Na halides, halates, nitrates 334, hydrocarbon selectivity 518, gas-liquid 883, cellulose, alkali 884, *n*-butanol–benzene–H_2O 1046, iodine–D_2O–CCl_4 1047, critical temp., hydrocarbons 1480, AlF_3 with nitrate, sulphate or chloride 1562, H_2S in monoethanolamine soln. 1563, hydrocarbon–furfural–H_2O 1564, H_2 in Zr 1728, isobutanol–benzene–H_2O 1729, DDT 2190, Zn acetate in acetic acid, effect of $LiNO_3$ 2191, salts in ethylenediamine 2192, AgOAc in EtOH–H_2O mixtures 2809, basic open-hearth slags, citric acid 2810
Solutions 532.73, 541.8 *see also* Latent heat
SiO in water and HCl, sol. energy 142, dipolar ions, dielectric properties 238, dimerization 520, cryoscopic equation 521, 1308, polymers, viscosity 861, activity coeff., $NaBrO_3$ and $KClO_3$ 879, lignin, H_2SO_4 treatment 882, mixtures with zero, and with non-zero, energy of mixing 967, 968, entropies of mixing 1501, isomeric heptanes 1730, surface tension 2180, thermodynamics of surface 2181, C_6H_6 and cyclohexane, volume of mixing 2283, heterogeneously distributed polymers 2287, dist. of solute in any 2 phases 2442, binary and tertiary, sp. vols. 2765, extraction theory 2808
Sound *see* Acoustics
Sound reproduction 534.85 *see also* Hearing aids
aesthetics 157, needle buzz 158, in small rooms 552, distortion by needle wear 2214, broadcast sound preferences 2850
Space
Functional 513.88
weak convergence 436, Hermitian operators, spectrum 1208, Hermitian operators 1209, operator iteration 1210, 1211
Space charge
Electron beams
limiting stable current 1518, const. axial field 2312, density-modulated beams 2313, stationary electron swarms 2314, effect of space charge on cylindrical beam 2323, potential distribution in cylindrical beam 2324, K^+ neutralization 3026
Sparks
Electric 537.52 *see also* Lightning
divergent gaps 607, glow–arc transition theory 1148, concentration of the channel 1844, discharge-path photographs 2302, afterglow 3023
Specific heat 536.63 *see also* Thermodynamic properties
Cu, up to m.p. 222, cubic metal crystals 384, air and H_2–N_2, low temp., from sound vel. 539, LiF and NaF 591, KCl and KBr 593, metallic Si 594, and van der Waals' constant, gases 888, gaseous paraffins 951, Ti, low-temp. 958, nitrates, low temp. 959, Fe, Mg chromites, low temp. 960, gaseous hydrocarbons 1488, effect of fourth power vibrations 1534, $Gd_2(SO_4)_3.8H_2O$, deduced from suscept. meas. 1809, X_2Y_5 molecule 2363, water 2975, Al sulphates, low temp. 2993, α- and γ-Mn, low temp. 2994
Measurement 536.63.08
oscillograph method 222, metals at high temp. 2992
Spectra *see also* Absorption; Astronomical spectra; Colour; Luminescence; Mass spectra; Night sky; Raman effect; Spectrochemical analysis; Spectroscopy; Stark effect; Zeeman effect
Absorption (general) 535.34
linear conjugated systems 906, association bands 2902, extinction measurements 2908, influence of magnetic field 2909, infra-red absorption laws for gases 2915, fluid media phosphorescence and absorption 2940
Atoms
H intensity integral 91, Cd 176, radon, $1s_3$ and $1s_2$ terms 564, inert gases, quadripole lines 565, H^- and O^- 822, 825, 2718, Ba I and Ba II 1391, Fe I 1392, Zn, transition probabilities 1397, Ca and Sr, transition probabilities 1398, doubly excited He 1399, Hg, transition probabilities 1400, Hg, intensity ratio 1401, highly ionized Mg and Na 1764, λ2967·5 and λ2269·8 of Hg I 1768; Hα, Hβ, Hγ, long duration 2237, interaction of proton and hydrogen atom 2297, interaction of proton and He atom 2298, excitation of coronal lines 2703, forbidden lines 2894, Nb I and Nb II (Amer. Cb) 2895, Br II 2898, Th II 2899, Na ions 2927, levels in light elements 3067
Continuous 535.338
eigen-phases and -functions 491, Schrödinger equation, variational problem 492
Inorganic liquids and solutions
Nd salt 1409, samarium nitrate 1421
Inorganic molecules
Diatomic
SiS, u.-v. 175, MgO, green 566, λ3338 OD 567, N_2, vibr. intensity distrib. 568, HCl, infra-red 569, N_2 in night sky 833, 2905, MgO, green and u.-v. 901, PbH and SnH 903, Hg Br molecule 1402, 2901, u.-v., HgCl 1403, MnH 1769, BiO 2238, S_2, rot. analysis 2239, Hg I molecule 2241, BeO 8 000–10 000Å 2242, Hg halides 2243, iodine 2887, CN 2904, HgCl3001
Polyatomic
HCN 1404, ClO_2, violet 1405, nitrous oxide line width 2900, O_3, Huggins band 2932
Inorganic solids
Diamond, luminescence 571, 576, rock salt 2944
Infra-red
diamond 1419, 3134
Organic molecules and substances
vacuum u-v 2914
Liquids and solutions
unsaturation in fats 179, alkaline fading of dye 338, pyrrole blue 570, triarylmethyl free radicals 904, 905, blood plasma 907, hydrocarbon—trinitrobenzene complexes 909, substituted benzene sulphonamides 910, aldazines 1410, pyridazine 1411, umbellulone 1412, polyisoprenes 1420, mononitronaphthylamines

Spectra—*contd.*
Organic molecules and substances—*contd.*
Liquids and solutions—*contd.*
1422, proteins and colloids 1423, dyes, solvent effect 1578, vitamins and proteins 1763, methylglyoxal 1771, porphyrin and chlorophyll 2907, aromatic hydrocarbons 2910, monoaminoacridines 2912, fatty acids 2916, 6 classes of dyes 2917, diaminotriphenylmethane dyes 2918, p-benzoquinones 2919, 2 : 4-dinitrophenylhydrazones 2920, thymine 2921, D-vitamins 2925, dienones, dienals 2930, aminoacridines 2931
Infra-red
rubber 178, furan, thiophen 908, high mol. wt. compounds 1393, rubber vulcanization 1396, coal 1413, 2924, phenylacetylene 1415, acrylonitrile and perbunan 1416, isomeric octanes 2896, cresols and xylenols 2922
Vapours
deuteroacetone 180, chloro-ethylenes 911, aniline vapour 2244, benzene, u-v emission 2903, pyridene vapour 2913, triple bond molecules 2926, acrolein, crotonaldehyde and mesityl oxide 2929, phenol vapour 2933
Infra-red
fluorinated hydrocarbons 1414, isomeric octanes in the vapour phase 2897, deutero-methyl chloride, 2923
X-ray 537.531: 535.33 *see* X-rays
Spectrochemical analysis 545.82 *see also* Colorimetry; Mass spectrometry; Spectrographs; Spectroscopy techniques 1375, 1377, appl. in petroleum industry 171, microdensitometry 704, equipment for quantitative 1376, steel-mill appl. 1390, symposium 1760, analysis of solids 2886
Absorption spectra
cellulose determination 162, vitamin assay 556, P 1130, determination of Fe 1356, fats and oils 1359, purity of org. solvents 1360, quenching oils 1362, symposium 1760, light absorption methods 1770, Si in alloy steels 2220, small amounts of Cu 2222, anhydro base of viridine green 2223, $Ce(SO_4)_2$ complex ions 2224, γ-tocopherol 2225, corrosion-resistant steel analysis 2226, Al in steel 2546, Fe in presence of Co 2547, Co in tissues 2548, traces of Ni 2549, aerolein 2550, N_2 in ferro-alloys 2551, Be ores 2553, wrought Cu alloys 2555, HCHO 2863, Ni as dimethylglyoxime 2866, TNT 2867
Infra-red
butadiene 381, an introduction 1417, examples 1418, liquid phase hydrocarbons 2928
Emission spectra
h.v. spark excitation 172, brass 173, steel, routine 421, Al and alloys 703, determination of Na, K and Li in cement 1381, spark stability 1382, trace-elements, iron and steel 1389, symposium 1760, appl. to metallurgy 1762, Se 1766, Cu-base alloys 1767, 2556, P, Ti and Zr detection limits 2537, steel segregates 2552, trace elements in Fe analysis 2554, Cu base alloys 2556
Spectrographs 535.33.072 *see also* Mass spectrographs; Spectroscopy
direct reading 1384, infra-red, technique 1385, infra-red, small prism 2234, fast grating 2890
Accessories
reducing electrical interference 561, electrode-shaping 563, variable-path-length cell 900, non-mechanical spark interrupter 1378, absorption cells 1383, cell thickness measurement 1386, heated absorption cell 1387, frequency calibrator 1388, solvents for infra-red 1424, plates for ultra-violet 2655, computer 2889, infra-red cells 2911, comparator 2969, use of thermocouples 3018
Spectrophotometry 535.243 *see also* Colorimetry
plate calibration 163, visual measurement 557, photo cell applications 558, colour-temp.-meter 934, intensity scales 1357, special cuvettes 1358, optical system 1363, standard glasses 1456, p.e. ultra-violet 1752, illuminating condition 2219, extinction coefficients of standards 2221, use of retardation plates 2864, photo-multiplier tubes 2865, absorption extinction measurement 2908
Spectroscopy 535.33 *see also* Spectra; Spectrographs; Spectrophotometry
spark stability 1382, infra-red, appl. to chemistry, symposium 1394, 1395, demonstration spectrum 2233, conference 2888
Light sources
arc discharge 174, arc source 562, H-arc performance 1361, spark-source irradiation 1379, spark-gap irradiation 1380, infra-red 1383
Spheres
Geometry 513.44
spheres and circles 23, associated with tetrahedron 430, open packing 1189
Spin *see also* Rotating bodies
spin in the universe 1680
Spontaneous reactions 541.126
detonating 1056, fertilizer mixtures 1805, combustion of hay 2453, detonator initiating efficiency 2455, spark ignition 3094
Sputtering
theory 254, oblique ion impact 255
Standardization 389.6
photography 762
Star catalogues 523.89
systematic corrections 1672, photovisual sequences 2704, colour indices 2705, colour index for polar stars 2721
Stark effect 537.228.5
theory 1508, Ca, Ba and A lines 2296, interaction of proton with H or He atom 2297, 2298
Stars 523.8 *see also* Astronomical spectra; Binary stars; Nebulae; Novae; Stellar structure; Variable stars
faint B-type 828, star counts 2716
Radiation 523.821 *see also* Astronomical spectra
relation of colour index to wavelength 2131, photovisual sequences 2704, colour indices 2705, δ Ceph. light curves 2708, departure from black-body conditions 2719, colour index for polar stars 2721
Statistical analysis 519.24/.28 *see also* Sampling
ability tests 1, factor analysis 18, measure of divergence 76, significant figures in tables 1640, distr. of numbers in tables 1641, inequality relation 1642, block design 1643, Hotelling's T^2 2103
Statistical mechanics 531.19
relaxation processes 99, perfect gases 100, superlattices theory 390, 1686, 2575, extremely high temperatures 496, co-operative phenomena, theory 639, liquids and gases 1244, appl. to adsorption 1685
Statistics
Applications 519.283 *see also* Quality control
post-war stability 77, epidemic curve 1218, 1219, industrial procedures 2108, irregularity in yarns 2386, distribution of wars 2690, sunspot prediction 2698
Steel *see* Iron and Steel
Stellar clusters 523.85
h Persei, motion 819, radial velocity 2130
Stellar motion 523.874
h Persei 819, 48 Librae 826, NGC 6231, velocities 827
Stellar structure 523.877
space densities, formulae 465, radiation transfer 829, stellar atmospheres, equilibrium 830, models, degenerate stars 831, Ceph. variables, pulsation theory 1667, supergiant atmospheres 1671, pressure relations 2118, Cowling model 2135, solar model 2136, radiative equilibrium of a stellar atmosphere 2137, 2723
Stereochemistry 541.63 *see also* Bonds; *Cis-trans* isomerism; Molecular structure; Steric hindrance
effect of *F*-strain 2520
Stereoscopy 535.767
projector 1789
Steric hindrance 541.636
barriers to internal rotation, calc. 373, resonance inhibition 374, organic base strength 2522
Strength *see* Mechanical strength
Stress analysis 531.252 *see also* Bending; Non-rigid solids; Stresses; Torsion
suspension bridges 845, framework, dyadic analysis 1188, elastic supports, load 1252, arches rigidly fixed each side 1254, membrane 1256, pre-stressed concrete girders 1259, overstrain of tubes 1260, wedges 1986, tension specimen neck 2005, wing covers 2149
Plates 531.258
strengthened holes 499, thin shells and plates 1255, indentation test specimen 1621, uniformly loaded

Stress analysis—*contd.*
Plates—*contd.*
2002, semi-infinite, with notched boundary 3082, infinite, with a circular hole 3083
Theory
"comparative stress" vector 314, Fourier method 497, finite differences 846, inf. solid, inf. force distrib. 849, by equivalent electric circuits 1253, relaxation methods 1257, double Fourier series 1615, surfaces of max. shear 1988, elastic medium, internal force 1998, Boussinesq field of a circular hole 2000
Stress/strain curves 539.382 *see also* Elastic moduli
rubber with carbon block 659, stress/strain/time formula 1025, keratin fibres 1030, straining machines, extensometry 1551, 2408, rubber, temp. variation 1994, 1995, paper strips 2004, stress in specimen neck 2005
Stresses
Elasticity 539.3/.4
visco-elastic media 1550, orthotropic solid 1987, tensor symmetry 1989, diaphragm-pump 2001, layered systems 2399, glass annealing 2401, metals, X-ray diffraction study 3087
Sublimation 536.422
N_2O triple point 1471, in Wilson chamber 2273
Sun 523.7 *see also* Astronomical spectra; Corona; Prominences; Radiation
atmosphere, conductivity 2301, observations on the Pic du Midi 2699, departure from bl. body 2861
Sunspots 523.746
magneto-hydrodynamic theory 460, sunspot numbers 461, 1224, 1225, 2115, magnetic field decay 462, earth currents and magnetism 715, Mt. Wilson data (April–Dec., 1944) 718, 2606, 2607, epoch of next max. 803, secular spot-frequency change 804, latitude variations 805, frequency table 1226, radio propagation 1227, ultra-violet and daylight rays 2116, predictions 2698
Super-fluidity 536.48
liquid He II 587, 2985, He II, thermomechanical effect 1818, thermodynamics 3016
Supersonics 534.321.9 *see* Ultrasonics
Supra-conductivity 537.312.62
transition state 1509, intermediate state 1842 frictionless transport 3016, electromagnet appl. 3017
Surface activity 532.69 *see also* Foams
use in paper 134, wax emulsification 135, growth of water drops 585, polypentaerythritol drying oils 1443, condensate removal 1721, floating drop, effect of l.p. 1722, spreading coefficient 2805
Surface energy 532.614
rel. to ht. of sublimation 130, *sec*-octyl-alcohol/water 367, statistical calculation 869
Surface tension 532.61 *see also* Capillarity; Contact angle; Films; Surface activity
drop-wt. method 126, hydrocarbons 127, sep. of oil from water 128, time-dependence in solns. 129, 2183, thixotropy 365, parachor; alcohols and hydrocarbons 371, structure of glass melts 1297, interpretation by potential measurement 1298, metal-spraying 1548, chain-length influence 1719, solutions 2180, statistical thermodynamics 2181, rate of trickle *v.* drop mass 2182, measurement by vibrating jet method 2795, change with time 2796, $CaCl_2$ solutions 2797, velocity time equation 2798, concentration curve minima 2799, drop rupture 2800, elastic recovery 2801
Surface texture 539.211
textile faults 1970, interferometry appl. 2948
Surfaces 513.735
area 2087
Algebraic 513.62 *see also* Quadrics
cubic, rational points 28, unicursal curves 30
Ruled 513.734
correspondence theorem 36, scrolls 2088
Surveying 526.9
radio waves, distance det. 486, altitude by pressure, temp. meas. 2726, pantograph 2727
Swelling 539.388.8
rubber in mixed liquids 138, rubber, effect of deformation 1031, rubber, effect of temp. and aniline pt. 2412, rubber-like polymers 2413, calendering, P.V.C. 2414
Tables
Mathematical 518.2
eclipsing binaries 790, punched card, log and exp. 1213, 1214, direction cosines 1633
Tachometers *see* Angular velocity
Technical organization 658
fuel research 744, time loss, intermittent working 2063, 2064
Temperature distribution *see also* Heat transfer; Sea temperature
unsteady heat flow, graphical methods 1466, in steel ingots 1792, molten glass 2970, toroidal coils 2972
Meteorology 551.524/.526
Lerwick and Kew data (1858–1943) 1585
Temperature measurement 536.5 *see also* Thermocouples, Thermometers
colour temp. scale 1355, high velocity air streams 1806, benzoic acid f.p. as fixed pt. 1807, railway motors in service 2279
Temperature regulation 536.58 *see also* Thermostats
temperature-sensitive turbine 219, compressor cooling water 588, methods in steel making 1169, cold storage rooms, forced air method 2988
Tensors 512.972
appl. to dynamics 33, Riemann, line geometry 34, invariant theory 1185, space rigid framework 1188
Terrestial electricity 550.37
solar eclipse effect 482, 483, sunspot relation 715, Indian soils 716, deep anomalies 1135, potential at earth's surface 2724
Terrestrial magnetism, 538.7, 550.38
early history 638, 2361, list of observatories 717, 2603, C_A and K indices (1944) 720, 2611, 2612, interpretation of anomalies 1136, asymptotic orbits in earth's field 1531, Puhipuhi plateau 2032, improved magnetometer 2351, Carnegie Instn. report 2600, 2604, vert. intensity by surface integrals 2602, *K*-indices (1943) 2610, abs. magnetometer 3065
Variations 550.384 *see also* Magnetic storms
sunspot relation 715, Mt. Wilson data, April–Dec., (1944) 718, 2606, 2607, recordings in varved clay 1137, declination, New Zealand 2033, Oslo (1843–1930) harmonic analysis 2605
Textiles 677 *see also* Fibres
cloth thickness measurement 106, std. tests 422, appl. of plastics 760, effect of chloramine 1012, action of formaldehyde 1015, preparation, fusiform cells 1112, kinematic analysis 1684, fault detection 1970, cross-sections of fibres 1976, fine structure 1985, hygroscopicity 2025, impregnation, properties 2061, tyre cords, temp. and hum. effects 2076, cottonization 2077, strength of bundles of threads 2100, water repellency 2187, tensile behaviour 2385, irregularities in yarns 2386, 3075, porosity 2388, mosquito nets, permeability 2389, water evaporation 2979
Artificial silk 667.46/.47
wet strength 749, water resistance 1019, nylon fluidity 1703, film printing 2078
Wool 677.31
fastness of oxyfisetin dyes 1164, natural dye fastness 1777, effects of sunlight 2021, absorption of water 3112
Therapeutics 615 *see also* Radiotherapy
protective colloids 364, u.v. radiation, Washington record 408
Thermal conductivity 536.2.022 *see* Conductivity
Thermal expansion 536.41
interferometer methods 185, invar, hysteresis 210, diamond 211, 583, 943, iodine lattice 383, NaCl, KCl and KBr, theory 584, LiF and NaF 591, metals, low temp. 942, tanning extracts 944, polythene 1470, Grüneisen's equation 1797, calculation from equations of state 2285, Zr, effect of oxides 2976
Thermal transformations 536.42 *see also* Melting; Vaporization
paraffin phase transitions 227, co-operative phenomena, general theory 639, plastics, thermal behaviour, relation to mol. structure 1798, alkali palmitates 1813, sub-cryst. Rochelle-salt structure changes 2563, NH_4Cl permittivity 2983, NH_4Cl hysteresis 2984

Thermionics 537.58
ionization of Br on hot W 267, MeCl dissociation on hot W 1121, oxide cathodes, electron-bombardment effect 1866, oxide cathodes, short-time effects 1872
Thermocouples 537.324 *see also* Thermopiles
bending jig 217, thermocouple–bolometer 1483, electronic potentiometer 1808, for infra-red spectrography 3018
Thermodynamic potential 536.77 *see also* Thermodynamics
polymers in mixed solvents 137, azeotropic solutions 229, nitroguanidine oxidation 685, surface, liquid mixtures 869, pyridine synthesis 970, high polymer-solutions, heterogeneous distributions 1501, 2287, octane isomerization 1503, hydrocarbon formation 1810, liquid state 1817
Thermodynamic properties *see also* Critical constants; Entropy; Heat capacity; Heat of reaction; Latent heat; Thermal transformations; Thermodynamic potential
cis-2-butene 209, GR–S rubber 221, methyl groups 373, Cr carbides 590, CCl_4 592, $ZnBr_2$ 597, gaseous paraffins 951, nitrates, low temp. 959, aq. salt solutions 962, SO_3 properties 966, ionization of H_3BO_3 1082, liquid hydrocarbon production 1484, ethylbenzene 1485, Al, K, NH_4 salts 1486, activity coeff., MeNH . HCl 1489, activity coeff., hydrocarbons 1564, *trans*-2-butene 2281, C_6H_6-cyclohexane 2283, 1,3-butadiene 2974, Al sulphates, low temps. 2993, α and γ-Mn, low temps. 2994, $HgCl_2$ vapour 3001, Mn, high temp. 3004
Thermodynamics 536.7 *see also* Entropy; Equations of state; Heat engines; Thermodynamic potential
transformations of fundamental equations 596, symmetry of relations 965, degenerate gas, transpiration 1500, corresponding states 3003, quantum theory 3005
Applications
statistics of perfect gases 100, high temp. statis. mechanics 496, v.p. and activity const. 946, mixtures with zero, and non-zero, energy of mixing 967, 968, metals near m.p. 1028, phase changes in monolayers 1304, solutions of heterogeneous polymers 1501, molecular arrangements 1502, effect of fourth-power vibrations 1534, high polymer solutions 1814, stretched rubber 1815, He II, thermomechanical effect 1818, solution surfaces 2181, irreversible processes in chemically reacting gases 2284, sub-cryst. Rochelle-salt structure changes 2563, superlattices 2575, lattice interaction energy 2743, energetics of biological systems 2771, Pb–Sn precipitation 2812, 2813, multicomponent systems 3000, geophysics, escaping gases 3002, frictionless aggregation state 3016
Thermo-electricity 537.32 *see also* Thermocouples; Thermopiles
Ni_3Mn 979, liquid and solid Se 1840, torsional-electric effect 3020
Thermometers 536.61 *see also* Thermocouples
electronic 216, moving-magnet indicator 949, resistance, testing 950, electronic thermocouple potentiometer 1808, const. pressure air 2278, indicating paints 2987
Thermopiles 536.53
microcalorimetry 218
Thermostats 536.581 *see also* Temperature regulation
Valverde, bimetal 844, for electric furnace 2280, 2991, for fuel economy 2989, pulsation type 2990
Thickness measurement 531.717
cloth 106, steel plate linings 107, non-ferrous castings 853, electro-deposited metals 854, polarimeter method 1433, Zn coating on steel 2154, ultrasonic gauge 2155, cylinders, electrically 2156
Thixotropy 541.18.025
theory 365, printing inks 2498
Thunderstorms 551.515.4
warm-front, diurnal variation 1587
Tides 525.6
analytical theory 84, Atlantic, theory 1674
Time 529.7
calendar, cycles and eras 1675
Measurement 531.76
portable multiple-circuit 505, arc duration 856, process timer 2162, timing instrument 2163
Topology 513.83
localization theory 44, sphere bundles 779, homotopy groups 1610, electrical network theory 1611, homology theory 2090, multiple curves 2664, point-curve correspondences 2666
Torsion 539.385 : 531.225
theory 62, photo-elastic study 1248, variational methods 1647, straight thin walled columns 2006
Transformations
Geometric 513.76/.77
pseudo-Euclidean rotations 17, projectivities on a line 40, Laplace transforms of varieties 57, non-cyclic groups 434, diophantine equivalence 435, projective collineation 792, transversality in n-space 1190, projection invariants 2089, homology theory 2090
Laplace 517.63
appl. to varieties in n-dim. space 57
Turbidity 535.434 *see* Scattering
Turbulence
Hydrodynamics 532.517.4
flow between planes 1291, indication by birefringence 2785, experimental investigation 2786
Tyndall effect 535.43 *see* Scattering
Ultrasonics 534.321.9
transmission through plate 534, absorption, transmission 538, velocity in air 539, velocity in oils 1334, appl. in high-polymer research 1338, wave-front determination 1339, 2843, interferometer 1340, sp. ht. of butadiene-1,3, meas. 1491, quartz generator 1741, echolocation by bats 1745, thickness measurement 2155, biological applications 2206, piezo-electric crystals 2560, elastic const. of crystals 2565, velocity, optical method 2845
Units 53.081.1/.5
vacuum 2824
Electrical 537.71
C.G.S.–M.K.S. conversion 1892
Vacuum apparatus 533.5
diode leak detector 1733, electronic pressure control 1734, greaseless magnetic valve 2821, high vac. cut-off 2822, thin glass windows 2823
Vacuum gauges 531.788
high-vacua 112, electronic recording 508, general 1700, ionization 1733, units 2824, logarithmic scale 2825
Vacuum pumps 533.5
disc type 525, pumping speed 885, high-vacuum unit 1735, 2195, rotating-disc 1736, diffusion, ultimate vacuum 2826, for electron microscope 2827
Valency 541.5 *see also* Bonds
covalent linkages 700, molecular constants 2512, boron hydrides 2513
Vaporization 536.422/.423 *see also* Boiling point; Condensation; Latent heat; Sublimation; Vapour pressure
Freon-12 347, glycol, control 586, through monolayers on water 947, metals from wire crucibles 1473, 1474, hydrocarbon thinners 1476, theory 1817, water through fabrics 2979
Vapour density 533.12
effect of drying 2980
Measurement 531.758
glass bulb apparatus 2161, centrifugal gravity meter 2766
Vapour pressure 536.423.15 *see also* Vaporization
alkali halides 214, trimethylamine 589, 2982, metal halides 880, relations to activity consts. 946, N_2O 1471, solid iron 1475, water, near 100° C. 1477, CCl_4 : C_2Cl_4 system 1478, CO_2 over NaOH and Na_2CO_3 solutions 1801, acetic-acid–benzene–CCl_4 1802, decahydronaphthalene 2272, *trans*-2-butene 2281, water 2975, N_2O_3, N_2O_4, effect of drying 2980, HNO_3 2981
Variable stars 523.84 *see also* Binary stars
white dwarfs 471, VSF 524 and 566 472, index HV 3985–HV 11975 473, BN Monocerotis: an N-type variable 474, ephemeris corrections 475, RV Vel, RX, TZ Cr A, UU Cr A, RS Ind. 476, GR Carinae 477, V444 Cyg, X Gruis, TV Normae, Scuti 478, computation tables 790, BK Aurigae 807, W Tucanae 808, S Doradus 809, HD 176853–HV 11085 810, periods and epochs 811, BD Virginis 812, 813, HD 193576 and V 444 Cyg

Variable stars—*contd.*
814, V 444 Cyg elements 815, Cepheid spectra 1228, magnitudes, RS and Nova Puppis 1663, γ Cass, changes 1664, Cepheids, amplitude effect 1665, light variation 1666, Ceph. variables, pulsation theory 1667, HD 193576 1668, American Association report 2119, 2120, anharmonic pulsations 2122, SX Cassiopeiae 2123, RX Cassiopeiae 2124, HV 11086 = HD 214419 2125, AR Monocerotis 2126, cluster-type Cepheids 2706, Mira Ceti spectrophotometry 2707, δ Ceph. light curves 2708, stars with thick atmospheres 2709, TX Ursae Majoris 2710, spectroscopic orbit of SVS 923 Herculis 2711, W Serpentis spectrum 2712, AB Persei spectra 2713, AU Monocerotis 2714, RZ Scuti 2715

Varieties
Algebraic 513.6
cubic primals 39, characterization 43, multiple curves 2664

Velocity measurement 531.76/.77 *see also* Light
aircraft, safe max. speed 526, gravitational ground-speed indicator 1694

Vibrating bodies *see also* Piezo-electric oscillations
One-dimensional 534.1
stability, periodic force 102, wave trains 151, lateral, peripheral and longitudinal 531, vertically hanging 1326, elastic beam 1629, shafts, turbine blades 2200
Two-dimensional 534.12
relaxation method 152, 1204, effect of radiation 532, elastic, symmetrical 1739, thin crystal 2836

Vibrations *see also* Acoustics; Damping; Piezo-electric oscillations; Vibrating bodies
forced 149, 528, 890, moment balancing 150, multi-disc system 527, James Forrest lecture 529, anisotropic bodies 530, influence function 892, turbine discs 893, 1327, aircraft 1321, network analyser solution 1325, 2840, variational methods 1647, pseudo-linear systems 1738, coupled bending torsion vibrations 1740, standing waves, demonstration 2198 elastic mountings 2199, singing corner vanes 2202, earthquake-resisting structures 2601, i.c. engines 2834, 2839, gyroscopic coupling terms 2835, steel plate in water 2837, aircraft equipment 2838
Composition 534.5
ultrasonic interferometer 1340, recording 1342, vibrating air column 1746
Excitation 534.14
mechanical self-excited 889, singing flames, theory 1329, 2204, musical instruments 1742, difference tones 2841
Measurement 534.15
nervous tremors 153, detector 533, electrical machines 1330, aircraft vibration analyser 1331, stroboscope 2842

Viruses 576.858
inactivation by α, γ and X-rays 260, tobacco mosaic, size and shape 695, diffusion meas. 1305, electron microscopy 2049, potato, u.v. detection 2216, tobacco necrosis, X-ray meas. 2593

Viscometers 532.137
co-axial cylinder 120, master viscometers 1281, suspended-level 1282, vibration type 1283, high temp. concentric cyl. for glass 1708, variable shear 2175, microviscometer 2778, flow-curve recorder 2779, opaque liquids 2780, B.S.I. tube accuracy 2781

Viscosity
Gases 533.16
high pressure 1313
Liquids 532.13
methyl dilinoleate 113, water 114, relaxation theory 115, sulphamic acid and salts 116, energy of cohesion 117, rel. to conc. 118, cellulose 119, 1278, 2170, 2171 wood pulp 303, elastic continua 375, HF 509, pectin 510, aldehydes, nitriles, amines 511, tobacco virus 695, virus solution 696, polymers, dilute solutions 861, structural suspensions 862, coumarone-indene resins 863, Ca stearate–oil 1105, 2-phase system 1273, styrene, butadiene 1274, gaseous He 1275, effect of h.f. field 1276, mixtures of high polymers 1277, 2777, coeff. of self-diffusion 1279, cellulose, chain length 1280, effect of aggregation 1570, goldenrod rubber, effect of irradiation 1701, coal-ash slag 1702, nylon in *m*-cresol 1703, nitrocellulose 1704, cellulose acetate, mol. wt. 1705, heterogeneity coefficient 1706, paper

Viscosity—*contd.*
Liquids—*contd.*
pulp 1707, high polymers, molecular flexibility 2168, rel. to refractive index 2169, mol. association 2172, dried Na silicate 2173, concentrated suspensions 2174, glass 2403, cellulose esters, effect of ultra-violet light 2487, peanut protein solutions 2772, denatured egg albumin 2773, high shear rates 2774, water, degree of association 2775, engine deposits 2776, flow orientation 2784, frictionless aggregation state 3016

Vision 535.7 *see also* Colour vision, Stereoscopy
Purkinje effect 161, universal research apparatus 193, dark-adaptation 194, 931, 1453, 1454, 2959, 2964, acuity 197, retina sensitivity 419, effect of neutrons on retina 652, aesthetic judgment 740, 1593, 1594, resolving power, physical basis 930, 1444, after effects 932, lighting design 933, 2264, vision threshold 1351, microscopy 1445, photochemical theory 1446, scotopic sensitivity 1447, visual resolution 1455, persistence 1778, effect of glare 1779, 2960, night-vision testing 2262, industrial visual efficiency rating 2263, photosensitivity of lower animals 2640

Vitamins 577.16
photochem. destruction 363, spectrophotometric assay 556, fluorescence 572, u.v. spectra 1763, action of ionizing radiations 1961

Voltmeters 537.742
valve voltmeter linearity 631

Volume measurement 531.73
tobacco virus particles 695, volumeter 2159, zein, sp. vol. 2763, shallow jars 2764, binary and tertiary solutions 2765

Water
supercooled, specific vol. 724, ion-exchange 1085, 2477, Cu hardness reduction 2065, thermal constants 2975

Waves *see also* Acoustics; Electromagnetic waves; Shock waves
Liquids 532.59
electromagnetic-hydrodynamic 637, ocean, internal 2794

Weather forecasts 551.509
for electric power systems 1142

Weirs
Hydrodynamics 532.53
quadratic 867, weir-form theory 1293

Wetting 532.696.1 *see also* Surface activity; Contact angle
porous surfaces 515, surface energy and adsorption 1118, contact angle measurement 2184, water repellency of fabrics 2187

Wind 551.55
SO_2 diffusion 1144

Wind tunnels 533.6.07
Boeing aircraft 144, 3-ph. blower drive 887, full-size 1737, motor drive 2831, branched type 2832

Wood 674
high density plywood 1170, compreg, strength 1595, hardwood columns 2409

Work-hardening 539.4.016
hevea and GR-S 660, high-speed steels 1033, Armco 1168, by shot peening 2011

X-ray absorption 537.531 : 535.34 *see also* X-ray spectra
correction for air 259, Ross filters 612, Al filters 3034

X-ray crystallography 548.73
algebraic method 391, new analysis method 392, optical pattern synthesis 393, 2596, powder diffraction analysis 394, orientation determination 395, Debye–Scherrer method 396, microdensitometry 712, diffraction by thermal waves 1515, X-ray diffraction, higher order terms 1516, single crystal, double Bragg reflections 1517, 1854, ruled surfaces of lattice interference 2027, future development 2393, conference report 2395, extra Laue spots 2576, photographic masks 2577, influence of absorption 2579, Debye–Scherrer, systematic errors 2580, pole figures 2584, micro-specimens, preparation 2585, extrapolation method 2586, calculator for reciprocal spacings 2587, two-circle goniometer 2588, fatigue in metals 2591, contact catalysts 2592, polycrystalline scattering 3028, electrolytic Mn structure, effect of H 3032, topographs 3124

X-ray crystallography—*contd.*
Alloys
β Al–Mg 711, order in Cu_3Au 2026, diffraction-line breadth, cold-worked metals 2589, grain orientation in the Mg alloy 2594
Inorganic 548.73
iodine lattice constants, thermal expansion 383, $(NH_4)_3\,ZnCl_5$ 709, $AlF_3\,.\,3H_2O$ dimorphism 1582, MgO particle size 2030, Ba titanate 2566, fluoberyllates 2570, ref. tricalcium phosphate hydrate 2578, γ-Al_2O_3 2590, KH_2PO_4 3125, Pb_2O_3 3126, W, Mo oxides 3127, Ca, Sr, Cd antimonates 3129, KH_2PO_4 at low temp. 3130, berylliumorthite 3131
Organic 548.73
coronene 708, Ph_3CCl and Ph_3CBr 710, glycerides 1132, sulphonates 1133, biphenylene 1581, protein fibres 1583, Cu *dl*-α-aminobutyrate 2581, Ni glycine dihydrate 2582, kojic acid 2583, tobacco necrosis virus 2593, polyisoprenes 2595, Na pectate 3128
X-ray diffraction 537.531 : 535.4
by thermal waves 1515, NaCl, higher order terms 1516, in single crystal 1517, low-angle 1852, double Bragg reflections 1854, American Society for (1944 report) 2311, X-ray line breadth, cold-worked metals 2589, metal stress study 3087
X-ray examination 539.26 *see also* Radiography
industrial applications 1980, metals and alloys 1981, 2396, future development 2393, conference report 2394, 2395, routine 2557
Substances
montmorillonites 305, Cd film 1023, collagen fibres 1024, silicic acid esters 1307, liquid A, atomic distrib. 1726, polythene 1983, stretched polymers 1984, natural and synthetic fibres 1985, protein films 2384, K laurate solution 2392, carbon blacks 3039, laminated plastics 3078, human bones 3081, silica alumina gels 3108, Ca, Sr, Cd antimonates 3129
Technique
powder diffraction 394, optimum powder thickness 655, fibres, relative intensities of lines 1982, comparative evaluation of powder patterns 2391, volatile substances 2398, back-reflection camera 3079, powder camera design 3080
X-ray monochromators
3030, balanced filters 611, Ross filters 612
X-ray reflection 537.531 : 535.312
Darwin–Prins formula 610, double Bragg, in single crystal 1517, 1854, diamond, beam divergence 2308, diamond, extra reflections 2309, 2310
X-ray scattering 537.531 : 535.43 *see also* Compton effect
low-angle 1852, from liquids, Fourier analysis 1853, by polycrystalline bodies 3028
X-ray spectra
Emission 537.531 : 535.33
direct and fluorescent excitation of Th L_{III} 620, Th, depth of origin 622, *K*-emission of A 1511, artificial radioactives, by Cauchois spectrometer 1849, 1850
Continuous
short-λ limit, structure 258, efficiency of production 621, energy and polarization, theory 3029
***K*-absorption**
Na, in Na halides 984, Mg 1512, Cl, free and in HCl 1513, Cl, in gaseous chloromethanes 1514, Cu, in cuprous halides 1851, solid KCl 3031
X-rays 537.531
use in petroleum industry 171, wavelength measurement by powder 304, microscopy 897, nuclear excitation of Ag, Cd, Au 1855, 1963, tubes, anode fitting 2209, "Bremsstrahlung" 2376, measurement 3027, analysis with filters 3034
Biological action
virus inactivation 260, chromosomes, nucleic acid 261, bean roots 262, bacilli 3036
Zeeman effect 538.615
Dirac equations 493, FeI arc spectrum 1392, Nb (Amer. Cb) 2895, liquid absorption spectra 2909
Zoology 591 *see also* Insecticides
firefly flashes 164, paramecium conductivity 243, action of NH_3 on hair 1545, X-ray structure of protein fibres 1583, echolocation by bats 1745, diff. equ. of growth 2056, muscle fibrils structure 2059, 3138

Printed by UNWIN BROTHERS LIMITED, LONDON AND WOKING